

Ranadip Pal

Electrical and Computer Engineering
Room 212
Texas Tech University
Box 43102, Lubbock, TX, 79409-3102

Phone: 806.283.8392
Email: ranadip.pal@ttu.edu
Web: <http://www.myweb.ttu.edu/rpal/>

EDUCATION:

Texas A&M University, College Station, TX
PhD, Electrical & Computer Engineering, 2007

Texas A&M University, College Station, TX
M.S., Electrical Engineering, 2004

Indian Institute of Technology (IIT), Kharagpur, India
B. Tech. Electronics and Electrical Communication Engineering, 2002

EXPERIENCE:

Spring 2023 –
Assistant Dean of Strategic Initiatives
Whitacre College of Engineering, Texas Tech University, Lubbock TX

Fall 2021 – Fall 2022
Associate Chair for Graduate Studies
Electrical and Computer Engineering Department, Texas Tech University, Lubbock TX

Fall 2020 –
Professor
Electrical and Computer Engineering Department, Texas Tech University, Lubbock TX

Fall 2013 – Summer 2020
Associate Professor
Ed & Linda Whitacre Faculty Fellow
Electrical and Computer Engineering Department, Texas Tech University, Lubbock TX

Fall 2007 – Summer 2013
Assistant Professor,
Electrical and Computer Engineering Department, Texas Tech University, Lubbock TX

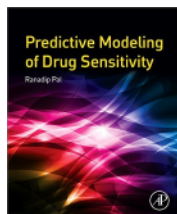
Fall 2002 – Summer 2007
Research Assistant, Genomic Signal Processing Lab,
Electrical and Computer Engineering Department, Texas A & M University, College Station TX

HONORS

- 2018: *Ed & Linda Whitacre Faculty Fellow*
- 2016: *Chancellor's Council Distinguished Research Award*
- 2014: *Whitacre Research Award*
- 2012: *Top Performer in NCI-DREAM Drug Sensitivity Prediction Challenge*
- 2012: *President's Excellence in Teaching Award*
- 2010: *NSF CAREER Award*

- 2005: Ebsenberger/Fouraker Fellowship Award for Research
- 2005: Association of Former Students Distinguished Graduate Student Masters Research Award
- 1998: Ranked in top 0.3 percent in IIT Joint Entrance Exam among 120,000 applicants.
- 1997: Indian National Math Olympiad Awardee

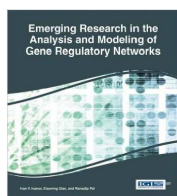
BOOKS



Ranadip Pal (2016), [Predictive Modeling of Drug Sensitivity](#),

Elsevier Academic Press

<http://store.elsevier.com/Predictive-Modeling-of-Drug-Sensitivity/Ranadip-Pal/isbn-9780128052747/>



Ivan Ivanov, Xiaoning Qian, Ranadip Pal (Eds.) 2016, [Emerging Research in the Analysis and Modeling of Gene Regulatory Networks](#) IGI Global

JOURNAL PUBLICATIONS

1. D. Nolte, O. Bazgir, S. Ghosh, **R. Pal**, Federated learning framework integrating REFINED CNN and Deep Regression Forests, *Bioinformatics Advances*, Volume 3, Issue 1, 2023, vbad036, <https://doi.org/10.1093/bioadv/vbad036>
2. D. Bandara, L. Ellingson, S. Ghosh, **R. Pal**. A Modified Neighborhood Hypothesis Test for Population Mean in Functional Data. *Journal of Agricultural, Biological and Environmental Statistics* (2023). <https://doi.org/10.1007/s13253-023-00549-y>
3. R. Zhang, S. Ghosh, **R. Pal**, “Predicting binding affinities of emerging variants of SARS-CoV-2 using spike protein sequencing data: observations, caveats and recommendations”, *Briefings in Bioinformatics*, Volume 23, Issue 3, May 2022, bbac128 (**IF 13.99**)
4. O. Bazgir, S. Ghosh, **R. Pal** “Investigation of REFINED CNN ensemble learning for anti-cancer drug sensitivity prediction”, *Bioinformatics* Volume 37, Issue Supplement_1, July 2021, Pages i42–i50 (**IF 5.6**)
5. Welch, N., Singh, S. S., Kumar, A., Dhruva, S. R., Mishra, S., Sekar, J., Bellar, A., Attaway, A. H., Chelluboyina, A., Willard, B. B., Li, L., Huo, Z., Karnik, S. S., Esser, K., Longworth, M. S., Shah, Y. M., Davuluri, G., **Pal, R.**, Dasarathy, S. (2021). Integrated multiomics analysis identifies molecular landscape perturbations during hyperammonemia in skeletal muscle and myotubes. *JOURNAL OF BIOLOGICAL CHEMISTRY*, 297(3). (**IF 5.48**)
6. O. Bazgir, R. Zhang, S. R. Dhruva, R. Rahman, S. Ghosh, **R. Pal** “Representation of features as images with neighborhood dependencies for compatibility with convolutional neural networks”, *Nature Communications* 2020 Sep 1;11(1):4391 (**IF 17.69**)
7. O. Bazgir, D. Nolte, S. R. Dhruva, Y. Li, C. Li, S. Ghosh, R. Pal, “Active shooter detection in multiple-person scenario using RF based Machine Vision,” in *IEEE Sensors Journal*, doi: 10.1109/JSEN.2020.3028362 (**IF 3.07**)
8. Berlow, N., Grasso, C., Quist, M., Cheng, M., Gandour-Edwards, R., Hernandez, B., Michalek, J., Ryan, C., Spellman, P., **Pal, R.**, Million, L., Renneker, M., Keller, C. (2020). “Deep Functional and Molecular Characterization of a High-Risk Undifferentiated Pleomorphic Sarcoma”. *Sarcoma*. 2020. 1-11. 10.1155/2020/6312480.
9. K. Matlock, R. Rahman, S. Ghosh, **R. Pal** “Sstack: An R Package for Stacking with Applications to Scenarios Involving Sequential Addition of Samples and Features”, *Bioinformatics*, 2019 btz010, <https://doi.org/10.1093/bioinformatics/btz010> (**IF 5.48**)

10. N. Berlow, **R. Pal** *, C. Keller *, “Probabilistic modeling of personalized drug combinations from integrated chemical screen and molecular data in sarcoma”, *BMC Cancer* **19**, 593 (2019) (*joint corresponding authors) (**IF 3.28**)
11. N. Bharathy, N. Berlow, **R. Pal**,...C. Keller, “Preclinical rationale for entinostat in embryonal Rhabdomyosarcoma” *Skelet Muscle*. 2019 May 21;9(1):12 (**IF 3.95**)
12. R. Rahman, S. R. Dhruha, S. Ghosh, **R. Pal**. “Functional Random Forests with applications in dose response predictions” *Scientific Reports* **9**, Article Number: 1628 (2019) (**IF 4.12**)
13. A. Rahman, S. R. Dhruha, S. Ghosh, and **R. Pal**. “Recursive Model for Dose-time Responses in Pharmacological Studies”, *BMC Bioinformatics* (2019) , 20 (317) (**IF 2.21**)
14. R. Rahman, S. R. Dhruha, K. Matlock, C. De-Niz, S. Ghosh, **R. Pal** “Evaluating the Consistency of Large Scale Pharmacogenomic Studies” *Briefings in Bioinformatics* (2019), Volume 20, Issue 5, Pages 1734-1753, <https://doi.org/10.1093/bib/> (**IF 6.30**)
15. Y. Li, Z. Peng, **R. Pal**, C. Li, “Potential Active Shooter Detection Based on Radar Micro-Doppler and Range-Doppler Analysis Using Artificial Neural Network”, in *IEEE Sensors Journal, Vol 19, Issue 3, Pages: 1052-63, 2018*, doi: 10.1109/JSEN.2018.2879223 (**IF 2.61**)
16. B. K. Ghosh, A. Datta, **R. Pal**, “Deep Sequencing Data Analysis”, *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, Volume 15 Issue 2, Pages 482-83, 2018 (**IF 2.42**)
17. N. Bharathy, N. Berlow, **R. Pal**,...C. Keller, “HDAC3-SMARCA4-miR27a regulation of the PAX:FOXO1 fusion oncogenes in rhabdomyosarcoma” *Science Signaling*, Vol 11, Issue 557, eaau7632, 2018 (**IF 6.37**)
18. A Rahman, S. Ghosh, and **R. Pal**. “Modeling of drug diffusion in a solid tumor leading to tumor cell death”. *Phys. Rev. E* **98**, 062408, 2018. (**IF 2.61**)
19. S. R. Dhruha, R. Rahman, K. Matlock, S. Ghosh, **R. Pal** “Application of Transfer Learning for Cancer Drug Sensitivity Prediction” *BMC Bioinformatics* 19-S(17): 51-63 (2018) (**IF 2.21**)
20. J. Mayer, R. Rahman, S. Ghosh, **R. Pal** “Sequential Feature Selection and Inference using Multivariate Random Forests” *Bioinformatics* (2018), 34 (8):1336-1344 (**IF 5.48**)
21. K. Matlock, C. De-Niz, R. Rahman, S. Ghosh, **R. Pal** “Investigation of Model Stacking for Drug Sensitivity Prediction” *BMC Bioinformatics* (2018) 19(Suppl 3):71 (**IF 2.21**)
22. R. Rahman, K. Matlock, S. Ghosh, **R. Pal** “Heterogeneity Aware Random Forest for Drug Sensitivity Prediction” *Scientific Reports* **7**, 11347 (2017) (**IF 4.12**)
23. R. Rahman, J. Otridge, **R. Pal**, “IntegratedMRF: Random Forest based framework for integrating prediction from different data types”, *Bioinformatics* (2017) 33 (9): 1407-1410 (**IF 5.48**)
24. K. Matlock, N. Berlow, C. Keller, **R. Pal**, “Combination therapy design for maximizing sensitivity and minimizing toxicity” *BMC Bioinformatics* 2017 18(Suppl 4):116 (**IF 2.21**)
25. De-Niz, R. Rahman, **R. Pal** , “Algorithms for Drug Sensitivity Prediction”, *Algorithms* **9** (4), 77
26. S. Haider, R. Rahman, S. Ghosh, **R. Pal** “A copula based approach for design of multivariate random forests for drug sensitivity prediction”, *PLOS ONE* **10**(12), e0144490, 2015 (**IF 2.76**)
27. R. Rahman, S. Haider, S. Ghosh, **R. Pal**, “Design of Probabilistic Random Forests with applications to Anticancer Drug Sensitivity Prediction”, *Cancer Informatics*, 2015, 14 (suppl. 5), 57-73.
28. S. Grasso, Y. Tang, N. Truffaux, N. Berlow, L. Liu, M. Debily, M. J. Quist, L. E. Davis, E. C. Huang, P. J. Woo, A. Ponnuswami, S. Chen, T. Johung, W. Sun, M. Kogiso, Y. Du, Q. Lin, Y. Huang, M. Hütt-Cabezas, K. E. Warren, L. Le Dret, P. S. Meltzer, H. Mao, M. Quezado, D. G. van Vuurden, J. Abraham, M. Fouladi, M. N. Svalina, N. Wang, C Hawkins, J. Nazarian, M. M. Alonso, E. Raabe, E. Hulleman, P. T. Spellman, X. Li, C. Keller*, **R. Pal***, J. Grill*, M. Monje* “Functionally-defined Therapeutic Targets in Diffuse Intrinsic Pontine Glioma”, *Nature Medicine*, 2015, doi:10.1038/nm.3855, <http://www.nature.com/nm/journal/vaop/ncurrent/full/nm.3855.html> *These authors jointly directed this work. (**IF 32.62**)
29. Halvorson KG, Barton KL, Schroeder K, Misuraca KL, Hoeman C, Chung A, Crabtree DM, Cordero FJ, Singh R, Spasojevic I, Berlow N, **Pal R**, Becher OJ, “A High-Throughput *In Vitro* Drug Screen in a Genetically Engineered Mouse Model of Diffuse Intrinsic Pontine Glioma Identifies BMS-754807 as a Promising Therapeutic Agent.” *PloS ONE* **10**(3): e0118926, 2015. Doi:10.1371/journal.pone.0118926 (**IF 2.76**)
30. R Navabi, S Abedi, SH Hosseinian, **R Pal** “On the fast convergence modeling and accurate calculation of PV output energy for operation and planning studies” *Energy Conversion and Management* **89**, 497-506, 2015 (**IF 5.58**)

31. S. Hettmer, Z. Li, A. N Billin, F. G Barr, DDW Cornelison, A R Ehrlich, D C Guttridge, A Hayes-Jordan, L J Helman, P J Houghton, J Khan, D M Langenau, C M Linardic, **R Pal**, T A Partridge, G K Pavlath, R Rota, B W Schäfer, J Shipley, B Stillman, L H Wexler, A J Wagers, C Keller “Rhabdomyosarcoma: Current Challenges and Their Implications for Developing Therapies” *Cold Spring Harbor perspectives in medicine*, Vol 4, Issue 11, Pg a025650, 2014 (**IF 3.97**)
32. N. Berlow, L. Davis, C. Keller, **R. Pal**, “Inference of dynamic biological networks based on responses to drug perturbations” *EURASIP Journal on Bioinformatics and Systems Biology*, 2014, 2014:14 doi:10.1186/s13637-014-0014-1
33. Q. Wan, **R. Pal** “An ensemble based top performing approach for NCI-DREAM drug sensitivity prediction challenge”, *PloS ONE* 9(6): e101183, 2014 (**IF 2.76**)
34. J. C. Costello et al. “A community effort to assess and improve drug sensitivity prediction algorithms.” *Nature Biotechnology*, doi:10.1038/nbt.2877 , 2014 <http://www.nature.com/nbt/journal/vaop/ncurrent/full/nbt.2877.html> (**IF 35.72**)
35. N. Berlow, S. Haider, Q. Wan, M. Geltzeiler, L. E. Davis, C. Keller, **R. Pal** “An integrated approach to anti-cancer drugs sensitivity prediction”, *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, 2014 [10.1109/TCBB.2014.2321138](https://doi.org/10.1109/TCBB.2014.2321138) (**IF 2.61**)
36. M. U. Caglar, **R. Pal** “A Diverse Stochastic Search Algorithm for Combination Therapeutics”, *BioMed Research International*, 2014, [doi 10.1155/2014/873436](https://doi.org/10.1155/2014/873436)
37. **R. Pal** “Modeling and inference of genetic interactions”, *WIREs Data Mining Knowl Discov* 2013. Doi: 10.1002/widm.1103
38. N. Berlow, L. Davis, E. Cantor, B. Seguin, C. Keller, **R. Pal**, “A new approach for prediction of tumor sensitivity to targeted drugs based on functional data”, *BMC Bioinformatics*, 2013, 14:239 Highly accessed (**IF 2.21**)
39. M. U. Caglar, **R. Pal**, “Stochastic Model Simulation Using Kronecker Product Analysis and Zassenhaus Formula Approximation”, *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, Vol 10, Issue 5, pages 1125-1136, 2013. [10.1109/TCBB.2013.34](https://doi.org/10.1109/TCBB.2013.34) (**IF 2.61**)
40. S. Haider, **R. Pal**, “Integrated Analysis of Transcriptomic and Proteomic Data”, *Current Genomics*, Vol 14, Issue 2, pages 91-110, 2013 (**IF 2.17**)
41. S. Haider, **R. Pal**, “Boolean network inference from time series data incorporating prior biological knowledge”, *BMC Genomics* 2012, **13**(Suppl 6):S9, [doi:10.1186/1471-2164-13-S6-S9](https://doi.org/10.1186/1471-2164-13-S6-S9) (**IF 3.73**)
42. N. Berlow, **R. Pal**, “Generation of Stationary control policies with best expected performance for a family of Markov Chains”, *Journal of Biological Systems*, Vol. 20, No. 4, pages 423-440, 2012.
43. J. Abraham, Y. X. Chua, J. M. Glover, J. W. Tyner, M. M. Loriaux, A. Kilcoyne, F. J. Giles, L. D. Nelson, J. S. Carew, Y. Ouyang, J. E. Michalek, **R. Pal**, B. J. Druker, B. P. Rubin, C. Keller, “An adaptive Src–PDGFRA–Raf axis in rhabdomyosarcoma”, *Biochemical and Biophysical Research Communications*, Vol 426 (3), Pages 363-368, 2012.
44. **R. Pal**, S. Bhattacharya “Transient dynamics of reduced order models of genetic regulatory networks” *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, Volume 9 Issue 4, Pages 1230-1244 PMID 22411891, 2012. (**IF 2.61**)
45. **R. Pal**, S. Bhattacharya, M. U. Caglar, “Robust Approaches for Genetic Regulatory Network Modeling and Intervention”, *IEEE Signal Processing Magazine*, Vol. 29, No. 1, Pg. 66-76, 2012 (**IF 7.45**)
46. B. P. Rubin, K. Nishijo, H. H. Chen, X. Yi, D. P. Schuetze, **R. Pal**, S. I. Prajapati, J. Abraham, B. R. Arenkiel, QR Chen, S. Davis, A. T. McCleish, M. R. Capecchi, J. E. Michalek, L. A. Zarzabal, J. Khan, Z. Yu, D. M. Parham, F. G. Barr, P. S. Meltzer, Y. Chen, C. Keller “Evidence for an Unanticipated Relationship Between Undifferentiated Pleomorphic Sarcoma and Embryonal Rhabdomyosarcoma” *Cancer Cell*, Vol. 19, Pg. 177-191, No. 2, 2011. (**IF 22.84**)
47. **R. Pal**, S. Bhattacharya “Characterizing the effect of coarse-scale PBN modeling on dynamics and intervention performance of genetic regulatory networks represented by Stochastic Master Equation”, *IEEE Transactions on Signal Processing*, Vol. 58, Pg. 3341 – 3351, No.6, 2010 (**IF 4.3**)
48. **R. Pal** “Context-Sensitive Probabilistic Boolean Networks: Steady State Properties, Reduction and Steady State Approximation”, *IEEE Transactions on Signal Processing*, Vol. 58, Pg. 879-890, No.2, 2010 (**IF 4.3**)
49. E. R. Dougherty, **R. Pal**, X. Qian, A. Datta “Stationary and Structural Control in Gene Regulatory Networks: Basic Concepts”, *International Journal of Systems Science*, Vol. 41, No. 1, 5-16, 2010

50. **R. Pal**, A. Datta and E. Dougherty “Bayesian Robustness in the Control of Gene Regulatory Networks”, *IEEE Transactions on Signal Processing*, Vol 57, Pg. 3667-3678, 2009 (**IF 4.3**)
51. R. Layek, A. Datta, **R. Pal**, E. R. Dougherty, “Adaptive Intervention in Probabilistic Boolean Networks”, *Bioinformatics*, Vol 25, Pg. 2042-2048, 2009 (**IF 5.48**)
52. **R. Pal**, A. Datta and E. Dougherty “Robust Intervention in Probabilistic Boolean Networks”, *IEEE Transactions on Signal Processing*, Vol 56, No. 3, Pg. 1280-94, 2008. (**IF 4.3**)
53. Y. Qian, J. Venkatraj, R. Barhoumi, **R. Pal**, A. Datta, J. R. Wild and E. Tiffany-Castiglioni “Comparative Non-cholinergic Neurotoxic Effects of Paraoxon and Diisopropyl Fluorophosphate (DFP) on Human Neuroblastoma and Astrocytoma Cell Lines”, *Toxicology and Applied Pharmacology*, Vol. 219, No.2-3, Pg. 162-171, 2007. (**IF 3.7**)
54. A Datta, **R. Pal**, A. Choudhary and E. Dougherty “Control Approaches for Probabilistic Gene Regulatory Networks”, *IEEE Signal Processing Magazine*, Vol. 24, No. 1, 54-63, 2007. (**IF 7.45**)
55. Ivanov, **R. Pal** and E. Dougherty, “Size Reducing Mappings between Probabilistic Boolean Networks”, *IEEE Transactions on Signal Processing*, Vol. 55, no 5, 2310-2322, 2007. (**IF 4.3**)
56. **R. Pal**, A. Datta and E. Dougherty, “Optimal Infinite Horizon Control for Probabilistic Boolean Networks”, *IEEE Transactions on Signal Processing*, Vol. 54, no. 6: 2375-2387, 2006. (**IF 4.3**)
57. A Datta, **R. Pal** and E. Dougherty, “Intervention in Probabilistic Gene Regulatory Networks”, *Current Bioinformatics*, Vol. 1, No. 2: 167-184, 2006.
58. **R. Pal**, I. Ivanov, A. Datta and E. Dougherty. “Generating Boolean Networks with a Prescribed Attractor Structure” *Bioinformatics*, 2005, 21: 4021-4025. (**IF 5.48**)
59. **R. Pal**, A. Datta, A. J. Fornace, M. L. Bittner and E. Dougherty. “Boolean Relationships among Genes Responsive to Ionizing Radiation in the NCI 60 ACDS” *Bioinformatics*, 2005, 21: 1542–1549. (**IF 5.48**)
60. **R. Pal**, A. Datta, M. L. Bittner and E. Dougherty. “Intervention in Context Sensitive Probabilistic Boolean Networks”, *Bioinformatics*, 2005, 21: 1211-1218 (**IF 5.48**)
61. X. Zhou, X. Wang, **R. Pal**, I. Ivanov, M. Bittner and E. Dougherty, “A Bayesian Connectivity-based Approach to Constructing Probabilistic Gene Regulatory Networks”, *Bioinformatics*, 2004 20: 2918-2927 (**IF 5.48**)

PATENTS

- JJ McGlone, B Nutter, S Mitra, **R Pal** – *US Patent 9,084,411*, 2015: Livestock identification system and method. (Patent Licensed by *Animal Biotech* <http://www.animal-biotech.com>)
- **R. Pal**, C. Keller, B. Seguin, N. Berlow, *US Patent Application 14661918*: Target Inhibition Map System for Combination Therapy Design and Methods of Using Same.

EDITORIAL/FOREWORD

- B. J. Yoon, X. Qian, T. Kahveci, **R. Pal**, “Selected research articles from the 2018 International Workshop on Computational Network Biology: Modeling, Analysis, and Control (CNB-MAC)”, *BMC Bioinformatics*, 20: 316, 2019
- B. J. Yoon, X. Qian, T. Kahveci, **R. Pal**, “Selected research articles from the 2017 International Workshop on Computational Network Biology: Modeling, Analysis, and Control (CNB-MAC)”, *BMC Bioinformatics*, 19 (Suppl 3): 69, 2018
- **R. Pal**, Y. Huang, Y. Chen, “Selected articles from the IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS’2011)”, *BMC Genomics* 2012, **13**(Suppl 6):S1, doi:10.1186/1471-2164-13-S6-S1
- E. R. Dougherty, B-J Yoon, X Qian, **R Pal**, “Special Issue on Genomic Signal Processing: Foreword”, *Journal of Biological Systems*, Vol 20, No 4, vii-viii, 2012

BOOK CHAPTERS

- R. Rahman, **R. Pal** “Predictive Modeling of Anti-Cancer Drug Sensitivity from Genetic Characterizations” in *Cancer Bioinformatics*, 227-241, Springer 2018
- N. Berlow, **R. Pal**, “Target Inhibition Maps Based on Responses to Kinase Inhibitors”, in *Kinase Signaling Networks (Methods in Molecular Biology)*, 1636:507-522, Springer 2017
- X. Qian, **R. Pal**, “Structural Intervention and External Control for Markovian Regulatory Network Models”, in *Emerging Research in the Analysis and Modeling of Gene Regulatory Networks*, Pg 123-160, IGI Global, 2016
- **R. Pal** “Relationships between Models of Genetic Regulatory Networks with Emphasis on Discrete State Stochastic Models” in *Emerging Research in the Analysis and Modeling of Gene Regulatory Networks*, Pg 52-79, IGI Global, 2016

CONFERENCE PUBLICATIONS

Peer Reviewed Conference Proceedings

- A. Rahman, S. R. Dhruva, S. Ghosh, and **R. Pal**. “Recursive Model for Dose-time Responses in Pharmacological Studies”. In *Proceedings of the 2018 ACM International Conference on Bioinformatics, Computational Biology, and Health Informatics (BCB '18)*. ACM, New York, NY, USA, 2018, pp. 583-583.
- S. R. Dhruva, R. Rahman, K. Matlock, S. Ghosh, **R. Pal**, “Dimensionality Reduction Based Transfer Learning Applied to Pharmacogenomics Databases” *2018 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Honolulu, HI, USA, 2018, pp. 1246-1249.
- R. Rahman, C. Perera, S. Ghosh, **R. Pal**, “Adaptive Multi-Task Elastic Net Based Feature Selection from Pharmacogenomics Databases” *2018 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Honolulu, HI, USA, 2018, pp. 279-282.
- K. Matlock, S. R. Dhruva, M. Nazir, **R. Pal** “An Investigation of Proteomic Data for Application in Precision Medicine”, *Biomedical and Health Informatics (BHI)*, 2018 *IEEE EMBS International Conference on*, DOI 10.1109/BHI.2018.8333447
- K. Matlock, C. De-Niz, R. Rahman, S. Ghosh, **R. Pal**, “Investigation of Model Stacking for Drug Sensitivity Prediction”, *Proceedings of the 8th ACM International Conference on Bioinformatics, Computational Biology, and Health Informatics*, pp- 772-772, 2017
- R. Rahman and **R. Pal**, “A mathematical framework for analyzing drug combination toxicity for personalized medicine applications,” *2016 IEEE Healthcare Innovation Point-Of-Care Technologies Conference (HI-POCT)*, Cancun, Mexico, 2016, pp. 13-16. Doi: 10.1109/HIC.2016.7797685
- K. Matlock, N. Berlow, C. Keller, **R. Pal**, “Combination therapy design for maximizing sensitivity and minimizing toxicity”, In *Proceedings of the 7th ACM International Conference on Bioinformatics, Computational Biology, and Health Informatics (BCB '16)*. ACM, New York, NY, USA, 530-531. DOI: <https://doi.org/10.1145/2975167.2985672>
- H. Xie, **R. Pal**, S. Mitra, “A Descriptive Model of Resting-State Networks Using Markov Chains” *2016 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Orlando, FL, 2016, pp. 3594-3597.
- J. E. Hill, K. Matlock, **R. Pal**, B. Nutter, S. Mitra, “Automated segmentation of MS lesions in FLAIR, DIR and T2-w MR images via an information theoretic approach”. *Proc. SPIE 9784, Medical Imaging 2016*
- R. Rahman and **R. Pal**, “Analyzing drug sensitivity prediction based on dose response curve characteristics,” *2016 IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI)*, Las Vegas, NV, 2016, pp. 140-143. Doi: 10.1109/BHI.2016.7455854
- S. Haider and **R. Pal**. “Analysis of multivariate drug sensitivity dependence structure using copulas”. *2014 IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Pg. 1352-1355, 2014.
- Q. Wan and **R. Pal**. “Multi-objective optimization of ensemble of regression trees using genetic algorithms”. *2014 IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Pg. 1356-1359, 2014.

- Y. Li, **R. Pal** and Y. Li “Non-Contact Multi-Radar Smart Probing of Body Orientation Based on Micro-Doppler Signatures”, *Engineering in Medicine and Biology Society (EMBC), 2014 36th Annual International Conference of the IEEE* , Pg. 598-601, 2014
- Q. Wan, Y. Li, C. Li and **R. Pal** “Gesture Recognition for Smart Home Applications Using Portable Radar Sensors”, *Engineering in Medicine and Biology Society (EMBC), 2014 36th Annual International Conference of the IEEE* , Pg. 6414-6417, 2014
- Q. Wan and **R. Pal**. “A multivariate random forest based framework for drug sensitivity prediction”. *IEEE International Workshop on Genomic Signal Processing and Statistics(GENSIPS), 2013*,doi [10.1109/GENSIPS.2013.6735929](https://doi.org/10.1109/GENSIPS.2013.6735929)
- N. Berlow, S. Haider, **R. Pal**, and C. Keller. “Quantifying the inference power of a drug screen for predictive analysis” *IEEE International Workshop on Genomic Signal Processing and Statistics(GENSIPS), pgs: 49-52, 2013*. Doi [10.1109/GENSIPS.2013.6735928](https://doi.org/10.1109/GENSIPS.2013.6735928)
- S. Haider and **R. Pal** “Inference of tumor inhibition pathways from drug perturbation data” accepted *IEEE Global Conference on Signal and Image Processing (GlobalSIP)*, pgs: 95-98, 2013 doi [10.1109/GlobalSIP.2013.6736823](https://doi.org/10.1109/GlobalSIP.2013.6736823)
- S. Haider, N. Berlow, **R. Pal**, L. Davis and C. Keller “Combination Therapy Design for Targeted Therapeutics from a Drug-Protein Interaction Perspective” *IEEE International Workshop on Genomic Signal Processing and Statistics, GENSIPS*, pages 58-61, 2012 [10.1109/GENSIPS.2012.6507726](https://doi.org/10.1109/GENSIPS.2012.6507726)
- **R. Pal** and N. Berlow and S. Haider “Anticancer Drug Sensitivity Analysis: An integrated approach applied to Erlotinib sensitivity prediction in the CCLE Database” *IEEE International Workshop on Genomic Signal Processing and Statistics, GENSIPS*, pages 9-12, 2012 [10.1109/GENSIPS.2012.6507714](https://doi.org/10.1109/GENSIPS.2012.6507714)
- M. U. Caglar, **R. Pal**, “Complexity reduction of Stochastic Master Equation Simulation based on Kronecker Product Analysis”, *BCB’12 Proceedings of the ACM Conference on Bioinformatics, Computational Biology and Biomedicine*, pages 186-193, 2012 , doi [10.1145/2382936.2382960](https://doi.org/10.1145/2382936.2382960)
- 27 N. Berlow, **R. Pal**, L. Davis, C. Keller, “Analyzing Pathway Design From Drug Perturbation Experiments”, *IEEE Statistical Signal Processing (SSP) workshop, 2012*, pages 552-55, doi [10.1109/SSP.2012.6319757](https://doi.org/10.1109/SSP.2012.6319757)
- 26 **R. Pal**, N. Berlow, “A Kinase inhibition map approach for tumor sensitivity prediction and combination therapy design for targeted drugs”, *Pacific Symposium on Biocomputing (PSB) 2012: 351-62, PMID 22174290*
- 25 N. Berlow, **R. Pal**, “A novel approach for tumor sensitivity prediction and combination therapy design for targeted drugs” *IEEE International Workshop on Genomic Signal Processing and Statistics, GENSIPS*, 2011 doi [10.1109/GENSIPS.2011.6169435](https://doi.org/10.1109/GENSIPS.2011.6169435)
- S. Haider, **R. Pal**, “Inference of a Genetic Regulatory Network model from limited time series data” *IEEE International Workshop on Genomic Signal Processing and Statistics, GENSIPS*, 2011, doi [10.1109/GENSIPS.2011.6169470](https://doi.org/10.1109/GENSIPS.2011.6169470)
- S. Bhattacharya, **R. Pal**, “A novel critical time analysis approach for Genetic Regulatory Networks” *IEEE International Workshop on Genomic Signal Processing and Statistics, GENSIPS*, 2011, doi [10.1109/GENSIPS.2011.6169433](https://doi.org/10.1109/GENSIPS.2011.6169433)
- N. Berlow, **R. Pal**, “Generation Of Intervention Strategy For A Genetic Regulatory Network Represented By A Family Of Markov Chains” *33rd Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2011*. PMID 22256100
- **R. Pal**, D. Hoover, “Analyzing the effects of coarse-scale modeling of genetic regulatory networks”, *International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2011*.
- **R. Pal**, M. U. Caglar, “Control of stochastic master equation models of genetic regulatory networks by approximating their average behavior”, *IEEE International Workshop on Genomic Signal Processing and Statistics, GENSIPS*, 2010 doi [10.1109/GENSIPS.2010.5719681](https://doi.org/10.1109/GENSIPS.2010.5719681)
- **R. Pal**, S. Bhattacharya “Effect of coarse-scale modeling on control outcome of genetic regulatory networks” *Proceedings of the American Control Conference (ACC)*, pages 5942-47, 2010.
- K. Akrofi, **R. Pal**, M. Baker, B. Nutter, R. Schiffer “Classification of Alzheimer’s Disease and Mild Cognitive Impairment by Pattern Recognition of EEG Power and Coherence”, *International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2010*. Doi [10.1109/ICASSP.2010.5495193](https://doi.org/10.1109/ICASSP.2010.5495193)
- Y. Yang, **R. Pal**, M. O’Boyle “Classification of cognitive states using functional MRI data ”, *SPIE symposium on Medical Imaging*, 2010, doi:[10.1117/12.845261](https://doi.org/10.1117/12.845261)
- **R. Pal**, S. Bhattacharya “Steady-State Preserving Reduction for Genetic Regulatory Network Models”, *IEEE International Symposium of Computer-Based Medical Systems (IEEE CBMS 2009)*, doi [10.1109/CBMS.2009.5255246](https://doi.org/10.1109/CBMS.2009.5255246)

- **R. Pal** “Analyzing Steady State Probability Distributions of Context-Sensitive Probabilistic Boolean Networks”, *IEEE International Workshop on Genomic Signal Processing and Statistics*, GENSIPS, 2009, doi [10.1109/GENSIPS.2009.5174325](https://doi.org/10.1109/GENSIPS.2009.5174325)
- **R. Pal**, A. Datta, E. R. Dougherty “Quantification of data extraction noise in Probabilistic Boolean Network Modeling”, *IEEE International Workshop on Genomic Signal Processing and Statistics*, GENSIPS, 2009, doi [10.1109/GENSIPS.2009.5174324](https://doi.org/10.1109/GENSIPS.2009.5174324)
- R. Layek, A. Datta, **R. Pal**, E. Dougherty “Adaptive Intervention in Probabilistic Boolean Networks”, *Proceedings of the American Control Conference*, Pg. 5647-5652, 2009
- **R. Pal**, A. Datta and E. Dougherty, “Comparison of Robust Strategies for the control of gene regulatory networks”, *IEEE International Workshop on Genomic Signal Processing and Statistics*, GENSIPS, Phoenix, June 8-10, 2008.
- **R. Pal**, H. Lahdesmaki, I. Shmulevich, O. Yli-Harja and E. Dougherty, “On the constraint of gene regulatory networks to canalizing functions and post classes”, *IEEE International Workshop on Genomic Signal Processing and Statistics*, GENSIPS, Phoenix, June 8-10, 2008.
- **R. Pal**, A. Datta and E. Dougherty “Bayesian Robustness in the control of Gene Regulatory Networks”, *Proceedings of the IEEE Statistical Signal Processing Workshop*, 31-35, Madison, Wisconsin, August 2007.
- **R. Pal**, A. Datta and E. Dougherty “Robustness of Intervention strategies for Probabilistic Boolean Networks”, *IEEE International Workshop on Genomic Signal Processing and Statistics*, GENSIPS, Tuusula, Finland, June 2007.
- **R. Pal**, A. Datta and E. Dougherty “Robust Intervention in Probabilistic Boolean Networks”, *Proceedings of the American Control Conference*, 2405-2410, New York, NY, July 2007.
- I. Ivanov, **R. Pal**, and E. Dougherty , “Applying Reduction Mappings in Designing Genomic Regulatory Networks”, *IEEE/NLM International Workshop on Life Science Systems and Applications*, 2006
- **R. Pal**, I. Ivanov, A. Datta, M. L. Bittner and E. Dougherty “Synthesizing Boolean Networks with a Given Attractor Structure”, *IEEE International Workshop on Genomic Signal Processing and Statistics*, GENSIPS, College Station, Texas, May 2006
- **R. Pal**, A. Datta and E. Dougherty, “Optimal Infinite Horizon Control for Probabilistic Boolean Networks”, *Proceedings of the American Control Conference*, 668-673, Minneapolis, MN, June 2006.
- **R. Pal**, A. Datta and E. Dougherty, “Altering Steady-State Probabilities in Probabilistic Boolean Networks”, *IEEE International Workshop on Genomic Signal Processing and Statistics*, GENSIPS, College Station, Texas, May 2006.
- I. Ivanov, **R. Pal** and E. Dougherty, “Dynamics-Preserving Size Reduction Mappings for Probabilistic Boolean Networks”, *IEEE International Workshop on Genomic Signal Processing and Statistics*, GENSIPS, College Station, Texas, May 2006.
- **R. Pal**, A. Datta, Michael Bittner, E. Dougherty “External Control in a Special Class of Probabilistic Boolean Networks”, *Proceedings of the American Control Conference*, 411-416, Portland, OR, June 2005
- **R. Pal**, A. Datta, M. L. Bittner and E. Dougherty, “External Control in Probabilistic Boolean Networks”, *IEEE International Workshop on Genomic Signal Processing and Statistics*, GENSIPS, Newport, RI, May 2005.

Invited Conference Proceedings and other Abstracts

- Villalobos, C. A. S., Halbgewachs, K., Zhang, R., Lawrence, J. J., & **Pal, R.** (2022, Nov). A machine learning analysis on a recent human hippocampal transcriptome elucidates multivariate differentiating genes in Alzheimer’s Disease. *Neuroscience*.
- Welch, N., Singh, S. S., Kumar, A., Dhruva, S. R., Mishra, S., Sekar, J., Bellar, A., Attaway, A., Chelluboyina, A. K., Willard, B., Li, L., Huo, Z., Karnik, S. S., Esser, K., Longworth, M., Shah, Y., Davuluri, G., **Pal, R.**, & Dasarathy, S. (2021). CLUSTERED MOLECULAR RESPONSES TO HYPERAMMONEMIA MEDIATE SARCOPENIA IN CIRRHOSIS WITH ACCELERATED SKELETAL MUSCLE SENESCENCE.
- S. R. Dhruva, R. Rahman, K. Matlock, S. Ghosh, **R. Pal** “Application of Transfer Learning for Cancer Drug Sensitivity Prediction” *International Conference on Intelligent Biology and Medicine (ICIBM)*, 2018
- R. Rahman, S. Ghosh, **R. Pal**, “Incorporating Tumor Heterogeneity in ensemble based drug sensitivity prediction”, *International Conference on Intelligent Biology and Medicine (ICIBM)*, 2016
- N. Berlow, **R. Pal**, “Inference of tumor proliferation networks from functional and genomic data”, *International Conference on Intelligent Biology and Medicine (ICIBM)*, 2015

- C. Grasso et al. “Functionally-defined therapeutic targets in diffuse intrinsic pontine glioma: A report of the children’s oncology group DIPG preclinical consortium”, *Neuro-Oncology*, HG-047, 2014
- M. N. Geltzeiler, P. E. Andersen, N. D. Gross, E. L. Cantor, N. Berlow, **R. Pal**, R., and Keller, C. Personalized cancer care for head and neck squamous cell carcinoma. *Otolaryngology – Head and Neck Surgery*, 149(2 suppl):P184, 2013
- C. Grasso et al. “Therapeutic opportunities in diffuse intrinsic pontine gliomas determined by functional chemical screens and mutational profiling”, *Neuro-Oncology*, Vol 15, Pg 44-44, 2013
- K. Schroeder, E. Huang, N. Berlow, **R. Pal**, O. Becher “High throughput in-vitro drug screen to identify novel therapeutic targets for Diffuse Intrinsic Pontine Glioma”, 15th *International Symposium on Pediatric Neuro-Oncology – ISPNO*, Toronto, June 2012
- M. U. Caglar, **R. Pal** “Simulation of stochastic models with Kronecker product analysis & Zassenhaus approximation” *Biophysical Society 56th annual Meeting*, San Diego, California; February 25-29, 2012
- M. U. Caglar, **R. Pal**, “Relationships between genetic regulatory network models”, *IEEE Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, California, Nov, 2011
- **R. Pal**, N. Berlow, “A new approach for tumor sensitivity prediction and combination therapy design for targeted drugs”, *Innovations in Cancer Prevention and Research Conference*, Austin, Texas, Nov 2011
- U. Caglar, **R. Pal**, “Comparison of Control Approaches in Genetic Regulatory Networks by Using Stochastic Master Equation Models, Probabilistic Boolean Network Models and Differential Equation Models and Estimated Error Analyzes”, *American Physical Society, APS March Meeting 2011*, March 21-25, 2011, abstract #X40.014
- U. Caglar, **R. Pal** “Control of Stochastic Master Equation Models of Genetic Regulatory Networks by Approximating Their Average Behavior” *Joint Fall 2010 Meeting of the Texas Sections of the APS, AAPT, Zone 13 of SPS and the NSHP* <http://meetings.aps.org/link/BAPS.2010.TSF.FM3.5>
- S. Mitra, M. O’Boyle, F. Afrin, B. Nutter, M. Baker, **R. Pal** , B. Ghosh, ”Generating Structure function Correlation by ICA- based Mapping of Activation Patterns on Co-registered fMRI and FADTI”, *IEEE Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, California, October 26-29, 2008.
- A, Datta, **R. Pal** and E. Dougherty, “Control Approaches for Probabilistic Gene Regulatory Networks,” *Proceedings of the 14th Yale Workshop on Adaptive and Learning Systems*, pages 7-13, June 2-4, 2008
- **R. Pal**, A. Datta and E. Dougherty “Robust Intervention in Probabilistic Boolean Networks”, *Proceedings of the Asilomar Conference on Signals, Systems and Computers*, November 2007.

RESEARCH CITATIONS

	<i>Google Scholar</i>
h-index	32
Total Citations	4920

(Oct 2023)

GRANTS

Year	Title of Grant	Granting Agency	Total Amount (\$)	Role
09/2023-08/2025	2023-67017-40745 Characterization of 3d Printed Protein Inks with Customization using Machine Learning	USDA	\$299,620	Co-PI (25%)
09/2023-08/2026	1R01DK133905-01A1 Mechanistic basis of exercise responses in liver disease	NIH	\$99,747 (TTU portion)	Co-PI (PI from TTU 100%)
09/2022-08/2024	22X049- Therapeutic Response Prediction Model Evaluation	NIH/Leidos Biomedical Research	\$238,761	PI (100%)

08/2022-07/2027	R01 AG073826: The hippocampal dentate gyrus in aging and Alzheimer's disease: boosting transcription of retinoic acid-sensitive genes through vitamin A supplementation and HDAC inhibition	NIH	\$3,140,235 (\$475,020 for TTU)	Co-PI (PI from TTU 50%)
10/2020 – 09/2024	Collaborative Research: FET: Small: Machine Learning Models for Function-on-Function Regression	NSF	\$219,983	PI (100%)
08/2016-07/2020	R01 GM122084: Functional regression framework with applications to drug response prediction	NIH	\$641,745	PI (50%)
08/2019-07/2020	NSF Student Travel Grant for 2019 International Workshop on Computational Network Biology: Modeling, Analysis, and Control (CNB-MAC)	NSF	\$10,000	PI (100%)
10/2018-09/2021	GAANN Fellowship Program in the area of Cybersecurity of Critical Infrastructural Systems	DOE	\$746,250	Co-PI (10%)
08/2018-07/2019	NSF Student Travel Grant for 2018 International Workshop on Computational Network Biology: Modeling, Analysis, and Control (CNB-MAC)	NSF	\$10,000	PI (100%)
05/2017-04/2018	International Workshop on Computational Network Biology: Modeling, Analysis, and Control (CNB-MAC 2017)	NSF	\$10,000	PI (100%)
08/2015-06/2019	PFI:AIR-TT: Design of functionally-tested, genomics-informed personalized cancer therapy drug treatment plans	NSF	\$238,971	PI (100%)
06/2015-05/2016	An Ensemble Based Approach for Drug Sensitivity Prediction	NIH/Leidos Biomedical Research	\$100,000	PI (100%)
07/2014-12/2015	I-Corps: Combination targeted drug design for personalized cancer therapy	NSF	\$50,000	PI (100%)
06/2013-05/2014	Student Travel Award Support for GENSIPS'13	NSF	\$10,000	Co-PI (20%)
08/2012-07/2013	GENSIPS'12 Conference: Fostering Interdisciplinary Research and Education in Computational Biology	NSF	\$12,000	Co-PI (20%)
02/2010-01/2017	CAREER: Robustness in Genetic Regulatory Network Modeling and Control	NSF	\$404,180	PI (100%)
06/2010-12/2016	REU Supplement	NSF	\$14,140	PI (100%)
02/08-08/10	Building Engineers in West Texas	TWC	\$241,449	Co-PI (33%)
09/08-08/10	Modeling of the Human Brain through Synergistic Neuroimaging	TTU VPR	\$480,928	Co-PI (20%)
03/08-03/09	A Multidisciplinary Approach to Modeling Therapeutic Responses of Tumors in vivo	GCCRI (UTHSCSA) Internal Pilot Project Program	\$45,000	Co-PI (20%)

GRADUATE STUDENT SUPERVISION

Current Students

Ph.D.

- Daniel Nolte, B.S. from *TTU, GAAN Fellow*
- Cesar Augusto Sanchez Villalobos, B.S. and M.S. from *Universidad Simon Bolivar*
- Fernando Tsurukawa, B.S. from *Brazilian Military Institute of Engineering*
- Ahmed Bayoumi, B.S. from *TTU, TTU Graduate Recruitment Fellow*
- Sayani Ghosh, M.S. from *University of Glasgow*
- Amir Mohammad Soleimani Yazdi, M.S. from *Amirkabir University of Technology*

Graduated Students

PhD

1. Ruibo Zhang, **PhD**, Spring 2023 (Currently with *Merck* as Sr. Scientist)
2. Kamrul Foysal, **PhD**, Summer 2023 (Currently with *Mayo Clinic* as Data Scientist)
3. Omid Bazgir, **PhD**, Spring 2021 (Currently with *Genentech* as AI Scientist)
4. Saugato Rahman Dhruba, **PhD**, Spring 2021 (Currently with *NIH* as Visiting Fellow)
5. Raziur Rahman, **PhD**, Summer 2019 (Currently *Computational Scientist* at Lilly, first job after graduation with *Argonne National Laboratory* as *Computational Biology Fellow*)
6. Kevin Matlock, **PhD**, Fall 2018 (currently with *Omics Data Automation* as *Principal*)
7. Carlos De-Niz, **PhD**, Spring 2018 (currently with *Caris Life Sciences* as *Data Scientist*, previously *Harvard Medical School* as *Research Fellow*)
8. Saad Haider, **PhD**, Summer 2015 (Currently with *USDA* as *Research Fellow*, previously with *ABB* as *Machine Learning R&D Engineer*)
9. Noah Berlow, **PhD**, Summer 2015 (Currently with *cc-TDI* and *First Ascent Biomedical*)
10. Mehmet Umut Caglar, **PhD**, Summer 2014 (currently with *State Street* as *Lead Data Scientist*, Previously with *UT Austin* as *Computational Biology Fellow*)
11. Sonal Bhattacharya, **PhD**, Fall 2011 (currently with *Texas Tech University*)

MS

- Qian Wan, **M.S.**, Spring 2014 (currently with *Facebook* as *Software Engineer*)
- Nima Jaafari, **M.S.**, Summer, 2012 (currently with *OptTek Systems* as *Software Engineer*)
- Ye Yang, **M.S.**, Summer 2010 (currently with *Hanergy* as *Senior System Engineer*)
- Scott Block, **M.S.**, Fall 2010 (currently with *SLAC National Accelerator Laboratory* as *Staff Engineer*)
- Dongri Meng, **M.S.**, Spring 2011 (currently with *X-scan Imaging*)

Postdoc Supervision

- Amin Rahman, PhD from *New Jersey Institute of Technology* (currently with *University of Washington*)

DISSERTATION COMMITTEE MEMBER

- Arun Kumar Gururajan, Graduated in Spring 2009
- Bryan Hughes, Graduated in Spring 2010
- Muneem Shahriar, Graduated in Summer 2012
- Enrique Corona, Graduated in Summer 2012
- Sridharan Kamalakannan, Graduated in Fall 2012
- I-Wen Feng, Graduated in Summer 2013
- Jingqi Ao, Graduated in Spring 2014
- Bian Li, Graduated in Spring 2014

- Mesfin Dema, Graduated in Spring 2014
- Xiangyuan Zhao, Graduated in Spring 2017
- Sajjad Abedi, Graduated in Fall 2017
- Oliver Xie, Graduated in Spring 2018
- Joshua Mayer, Graduated in Summer 2017
- Xiangyu Li, Expected Graduate Fall 2019

UNDERGRADUATE ADVISING

- Davis Hoover: Summer - Fall 2010
- Nima Jaafari: Summer - Fall 2010
- Kim Ico: Summer 2010
- Stephen Vickers, Brian Gerlach and Jacob Smalts: *Biological System Monitoring*, Fall 2008
- Edward Alvarado: *fMRI data analysis*, Summer 2008
- Forrest Jones: *Genomic Data Analysis*, Spring 2009
- Robert Zirpoli: *Inference of Functional Relationships*, Spring 2010

TEACHING

Summary:

Fall 2007- Present: *Developed four graduate/senior-undergraduate level courses (ECE 5355, ECE5350, ECE 5332/EE 4332, ECE 5332/EE 4332) and regularly taught an electrical engineering undergraduate course (ECE 3353), graduate/senior-undergraduate course (EE 5367/ECE4367), and graduate (ECE 5371) level course.*

Details:

ECE 5355: Genomic Signal processing and Control: *Fall 2007, Fall 2010, Fall 2012, Fall 2016*

- Developed this interdisciplinary graduate course that provides an introduction to molecular biology and the engineering concepts of genomic data processing, classification, genetic regulatory network modeling and control.
- Students from Electrical Engineering, Mathematics, Physics and Biotechnology disciplines have enrolled in this course.
- This course started as a special topics subject and was converted into a regular course based on its effectiveness and encouraging response from students and is now an elective for the new bioengineering MS program.

ECE 5332/ ECE 4332: Random Signals and Systems: *Spring 2008, Fall 2011*

- Developed this course to strengthen the stochastic background of senior undergraduates and graduate students.

ECE 5332/ ECE 4332: Security Aware Machine Learning: *Spring 2021*

- Developed this course to provide a background on security and privacy topics in machine learning such as homomorphic encryption, multi-party secure communication, differential privacy, federated learning and model poisoning.

ECE 5332: Computational Systems Biology: *Spring 2019*

- Developed this course to provide a background on computational systems biology with topics such as biological data collection, feature selection, classification, regression modeling, genetic regulatory network modeling and validation techniques.

ECE 5367/ECE 4367: Image Processing: *Fall 2008, Fall 200, Fall 2013*

- In addition to the Image Processing fundamentals, also presented the cutting edge and fun technologies in this area like High Dynamic Range Imaging, Photo Tourism etc. to keep up the motivation of the students.

ECE 5332: Data Science: *Spring 2020, Spring 2023*

- Developed this new course that provided an introduction to methodologies and algorithms for modeling a system based on available data. The course covered techniques from machine learning, statistics and network theory that are commonly used for analyzing and designing predictive models from data.

ECE 5350: Introduction to Medical Instrumentation: *Spring 2009*

- Developed the first ever offering of the Medical Instrumentation course in the TTU ECE department. The course is one of the six core courses for the new MS in Bio-Engineering program.

ECE 5371: Engineering Analysis: *Spring 2014, Spring 2015, Spring 2016, Spring 2018, Fall 2018, Fall 2019, Fall 2020, Fall 2021, Spring 2022, Fall 2022, Fall 2023*

- Representative Comment: *“I am extremely sad to see this course approaching the end and I think this sums up my experience of this course. This has been an amazing class as I used to look forward to Wednesday. Dr. Pal did an amazing job as an instructor, as the topics he covered is very difficult to teach. I always thought something like stochastic process is nearly impossible to teach well. I am so glad that I have been wrong all along. I really learnt a lot and above anything, this class provokes a lot of thought and that alone makes this class a huge success. I am also so glad that I took this course under Dr. Pal and I believe more people should take this class with him.”*

ECE 3353: Feedback Control Systems, *Fall 2009, Spring 2010, Spring 2011, Spring 2012, Spring 2013*

- Considered by ECE undergraduate students to be one of the toughest courses. The following comment in the course evaluation by a student supports this statement and also suggests that students enjoyed the instructor’s course offering: *“This course was difficult, at least more so than others. However, I found it to be just right to stimulate learning. I greatly enjoyed this course with Dr. Pal. It has been one of my favorite”*.

BROADER ENGINEERING EDUCATION

- *Organized Contest on Design in Engineering CODE 2009* for high school and community college students. High school students from as far as Presidio which is a small town on the USA Mexico border with a population of 4000 attended the contest. The teams were assigned TTU ECE undergraduate mentors and they communicated with them on technical issues related to their design project. Led the discussions during contest kickoff where the students were introduced to opportunities at Texas Tech by engineering ambassadors and ECE mentors.
- In Summer 2009, supervised three high school students (*Leigh Logsdon, Katherine Bilbao and Austin Reid*) in a month long **internship** to build prototype engineering devices for healthcare.
- Presented seminars to primarily medical community at Texas Tech University Health Sciences Center (Cancer Grand Rounds, Oct 2009) and University of Texas Health Sciences Center at San Antonio (May 2008).

SERVICE

Service to the ECE Department

- Graduate Studies Committee Chair: Fall 2021 – Fall 2022
- Graduate Studies Committee Member: Fall 2007 – Summer 2021

- Computer Engineering Curriculum Committee Chair: Spring 2013 – Present
- Electrical Engineering Faculty Search Committee Member: Fall 2008 – Spring 2009
- Computer Engineering Faculty Search Committee Chair: Fall 2014 – Fall 2016
- Energy Faculty Search Committee Member: Fall 2012- Fall 2014
- ABET Communications and Signal Processing Subcommittee Chair: Fall 2020 – Present

Service to University

- MS in Bioengineering Program Coordinator
- MD/E program Coordinator
- MENG Program Coordinator
- FRAC chair, 2023
- Chair of Bioengineering Faculty Search Committee 2023
- Chair of Bioengineering Committee
- Faculty Senate 2022-2025
- Chemical Engineering Faculty Search Committee: Fall 2008
- TTU Career Forum Panelist: 2010, 2011
- TTU TLDC “*What the Best Teachers Do*” Panelist, 2012
- Bioengineering Committee: Fall 2013- Present
- Graduate Council Member: Fall 2015- Summer 2019
- College Tenure and Promotion Committee: 2021-2022

Service to Profession

- **IEEE BHI 2023 Special Panel Chair**
- **ACM-BCB 2023 Tutorial Chair**
- **NSF Review Panelist, 2023**
- **NIH NCI ITCR Review Meeting, Sep 2022**
- **NIH NCI ITCR Review meeting, March 2022**
- **DOE ASCR Mail-in Reviewer, 2022**
- **NIH NCI ITCR meeting, Oct 2021**
- **NSF Review Panelist 2021**
- **NSF Review Panelist, 2020**
- **Workshop Co-Chair, 2019 CNB-MAC cnbmac.org**
- **NSF Review Panelist, 2019**
- **CDMRP Reviewer, 2018**
- **Workshop Co-Chair, 2018 CNB-MAC cnbmac.org**
- **Awards Chair, 2017 CNB-MAC cnbmac.org**
- **NSF Review Panelist, 2017**
- **Guest Editor for IEEE TCBB “Deep Sequencing Data Analysis” 2016**
- **Associate Editor: EURASIP journal on Bioinformatics and Computational Biology 2013-2017**
- **NSF Review Panelist, 2014**
- **NIH Mail in Reviewer, 2014**
- **Technical Program Co-Chair, IEEE GENSIPS 2013**
- **NSF Review Panelist, 2012**
- **Organizing Committee Co-chair, IEEE GENSIPS 2012**
- **EURASIP journal on Bioinformatics and Computational Biology: Guest Editor for special issue on computational methods for biomarker discovery and systems biology research**
- **BMC Genomics Lead Supplement Editor, 2012,**
<http://www.biomedcentral.com/bmcgenomics/supplements/13/S6>
- **Program Committee Member, International Workshop on Data Mining in Bioinformatics BIODDD’12**
- **Journal of Biological Systems, Guest Editor for special issue on Genomic Signal Processing**
- **Program Committee Member IEEE CBMS, 2012**

- *Program Committee Member* International Conference on Intelligent Biology and Medicine (ICIBM), 2012 , 2013
- *NIH R03 mail-in Reviewer*, 2012
- **Publications Chair**, IEEE GENSIPS 2011
- **Session Chair** for Clustering and Classification Methods, *IEEE GENSIPS 2011*
- *ICASSP 2011, organizer of special session* on *Advanced Signal Processing in Systems Biology*
- **NSF Review Panelist**, 2010
- *NSF ad-hoc Reviewer*, 2010
- *Program Committee Member*, IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS), 2010
- *International Program Committee Member*, BIOCOMP'10 – International Conference on Bioinformatics and Computational Biology, 2010
- *Program Committee Member*, IEEE International Symposium on Computer-Based Medical Systems (CBMS), 2009
- **NSF CAREER Review Panelist**, 2008
- **Finance Chair**, IEEE International Workshop on Genomic Signal Processing and Statistics (GENSIPS), 2008
- **Oral Session Chair** for Image Analysis, Networks & Control, IEEE GENSIPS 2008
- REVIEWER
 - IEEE Transactions on Signal Processing
 - IEEE Transactions on Systems, Man and Cybernetics
 - IEEE/ACM Transactions on Computational Biology and Bioinformatics
 - IEEE Transactions on Neural Networks
 - IEEE Transactions on Biomedical Engineering
 - Bioinformatics
 - Journal of Theoretical Biology
 - Automatica
 - IET Systems Biology
 - EURASIP Journal on Bioinformatics and Systems Biology

Professional Memberships

- Institute of Electrical and Electronics Engineers (IEEE) Senior Member
- AAAS Member

SELECTED INVITED TALKS

- “REFINED Convolutional Neural Networks”, TTU CS Graduate Seminar, Oct 2023
- Panelist for “*Role of Emerging AI/ML in Computational Network Biology*”, [CNB-MAC](#), Houston 2023
- “*Predictive Modeling of Drug Sensitivity*”, Univ. of Texas at Arlington, Bioengineering Departmental Seminar, September 2017
- “*Predictive Modeling of Drug Sensitivity*”, Univ. of Miami, ECE Seminar, June 2017
- “*Predictive Modeling of Drug Sensitivity*”, UConn BME Seminar, April 2017
- “*Predictive Modeling of Drug Sensitivity*”, UTSA ECE Graduate Seminar, October 2016
- “*Multivariate Random Forest Design using Copulas for Sensitivity Prediction*”, Texas Systems Day, UT Austin, April 2016
- “*Systems Approach to Combination Therapy for Cancer*”, Texas Systems Day, UT Dallas, March 2015
- “*Drug Sensitivity Prediction*”, *Invited Tutorial* in 2014 IEEE International Workshop on Genomic Signal Processing and Statistics

- “*Mathematical Design and Validation of Synergistic Anti-Cancer Drug Combinations*”, Invited Highlight talk in Workshop on Computational Network Biology: Modeling Analysis and Control, Sep 2014
- “*Predictive modeling of drug sensitivity*”, Banbury Center meeting on “*Rhabdomyosarcoma; A Critical Review of Research - Implications for Developing Therapies*”, May 2014
- “*Predictive modeling of drug sensitivity*”, Texas Tech Statistics Seminar, March, 2014
- “*Modeling of cancer pathway*”, Knight Cancer Institute Seminar Series, Oregon Health & Science University, October, 2011
- “*Robust Modeling and Control of Genetic Regulatory Networks*”, Schlumberger Cambridge Research Center, September 2011
- “*Tackling Model Complexity of Genetic Regulatory Networks*” USF Computer Science and Engineering Department 30th Anniversary Lecture Series, March 2011
- “*Analyzing the effects of coarse-scale modeling of genetic regulatory networks*”, Department of Physics, Texas Tech University, September 2010
- “*Tackling the issue of noise and limited data in Systems Biology & Biomedicine*” Electrical and Computer Engineering Department, Texas A&M University, May 2010
- “*Modeling and Control in Cancer Genomics*”, Cancer Grand Rounds, Texas Tech University Health Sciences Center, September 2009
- “*Crossroads of Biology and Engineering*”, Systems Biology Day, University of Texas Health Sciences Center at San Antonio, May 2008
- “*Boolean Relationships among Genes Responsive to Ionizing Radiation in the NCI 60 ACDS*”, Bioinformatics Seminar, Statistics Department, Texas A&M University, February 2005

News Article on our Research

- Brittany Price, “Tech researcher studying how to change cancer treatment”, *Fox34 News*, Sep 2016 <http://www.fox34.com/story/33165669/tech-researcher-studying-how-to-change-cancer-treatment>
- S. Chakradhar, “Analyses that combine 'omics' show cell targets in detail” *Nature Medicine* Sep;21(9):965-6, 2015. [doi: 10.1038/nm0915-965](https://doi.org/10.1038/nm0915-965).
- Texas Tech University. "Researchers develop models for targeted cancer therapy." *ScienceDaily*. ScienceDaily, 8 June 2015. www.sciencedaily.com/releases/2015/06/150608111602.htm