James V. Talwar
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EDUCATION

University of California San Diego, Jacobs School of Engineering — Sept. 2018 – Present
PhD candidate in Bioinformatics and Systems Biology; **GPA:** 3.97/4.00; **Advisor:** Hannah Carter, PhD — *La Jolla, CA*

- **Selected Coursework:** Neural Networks, Functional Genomics, Probabilistic Reasoning, Bioinformatics Algorithms, Recommender Systems, Quantitative Biology

University of California San Diego, Jacobs School of Engineering — Sept. 2021 – March 2023 (Expected)
MS in Computer Science: Artificial Intelligence; **GPA:** 3.97/4.00 — *La Jolla, CA*

University of Pennsylvania, School of Engineering and Applied Science — Sept. 2010 – May 2014
Bachelor of Science in Engineering, Bioengineering and Mathematics (Major/Minor) — *Philadelphia, PA*

- **Honors:** Dean's List; Graduation Honor *Cum Laude*

SKILLS

Programming Languages: Python, Java, Go, R, MATLAB, Arduino, LabVIEW
Open Source Libraries: PyTorch, Keras, DGL, Tensorflow

SELECTED PROJECTS

Identifying Immune Surveillance Contributions to Elusive Melanoma Risk — Jun. 2019 – Present

- Identified previously uncharacterized MHC-mechanisms of melanoma predisposition through autoimmune disease associations and driver mutation antigen presentation
- Code available at: https://github.com/cartercompbio/MelMHC

Improving Genetic Risk Scores in Breast and Prostate Cancer through Deep Learning — Apr. 2020 – Present

- Building flexible multi-task learning transformer architectures with a PyTorch backend capable of capturing SNP level epistatic interactions
- Models available upon request

Maximizing the Predictive Power of Neural Networks for Gene Expression Data — Mar. 2019 – Jun. 2019

- Optimized neural network performance for predicting cancer cell-line specific drug sensitivity through cross-training across drugs with shared target pathways.

TEACHING

Medical Scientist Training Program: Bioinformatics Bootcamp (RNA-seq) — Summer 2021

- **Teaching Assistant**: Constructed course website; Developed course materials and lectures; Ran interactive bioinformatics tutorials
- Course materials can be found at: https://github.com/jvtalwar/2021-MSTP-Bioinformatics-Bootcamp

INDUSTRY EXPERIENCE

Intheon (formerly Syntrogi Inc.) — Jun. 2014 – Aug. 2014
Engineering Intern at startup company specializing in neurotechnology — *San Diego, CA*

- Investigated mapping real-time EEG signals to spatial brain activities using signal strength and direction
- Developed interactive three-dimensional brain visualization models and updated GUI libraries

ResMed — Jun. 2013 – Aug. 2013
Engineering Intern at global medical device company — *Dublin, Ireland*

- Constructed hardware and wrote software resulting in the development of an automated light sensor test system for non-contact sleep monitor evaluation

SELECTED PUBLICATIONS AND POSTERS

1. **J. Talwar**, D. Laub, M. Pagadala, A. Castro, M. Lewis, G.E. Luebeck, B. Gorman, C. Pan, F.N. Dong, K. Markianos, R. Hauger, S. Pyarajan, P.S. Tsao, G.P. Morris, R.M. Salem, W.K. Thompson, K. Curtius, M. Zanetti, H. Carter. Autoimmune Alleles at the Major Histocompatibility Locus Modify Melanoma Susceptibility. *bioRxiv preprint*. (2021).
2. M. Pagadala, V.H. Wu, E. Pérez-Guijarro, H. Kim, A. Castro, **J. Talwar**, C. Gonzalez-Colin, S. Cao, B.J. Schmiedel, R.M. Salem, G.P. Morris, O. Harismendy, S.P. Patel, J.P. Mesirov, M. Zanetti, C. Day, C.C. Fan, W.K. Thompson, G. Merlino, J.S. Gutkind, P. Vijayanand, H. Carter. Germline variants that influence the tumor immune microenvironment also drive response to immunotherapy. *bioRxiv preprint*. (2021).
3. M.S. Pagadala, J.A. Linscott, **J. Talwar**, T. Seibert, B. Rose, J. Lynch, M. Panizzon, R. Hauger, M.H. Hansen, J.D. Sammon, M.H. Hayn, K. Kader, H. Carter, S.T. Ryan. PRState: Incorporating Genetic Ancestry in Prostate Cancer Risk scores for African American Men. *medRxiv preprint*. (2022).
4. **J. Talwar** and H. Carter. Assessing cancer drug response prediction from gene expression. Poster presented at: AACR Annual Meeting 2020; April 27-28, 2020 and June 22-24, 2020; Philadelphia, PA
5. **J. Talwar** and H. Carter. Identifying Melanoma Risk through Immune Surveillance. Poster presented at: 28th Conference on Intelligent Systems for Molecular Biology; July 13-16, 2020; Virtual Conference