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Alexander Verbitsky

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EDUCATION

Georgia Institute of Technology — Atlanta, GA
M.S. in Computer Science — Graduation: 2022

The Pennsylvania State University — University Park, PA
M.S. in Engineering Science and Mechanics — 2020
B.S. with Honors in Engineering Science, Minors in Engineering Mechanics and Biomedical Engineering — 2018

SKILLS

Tools & Technologies: Python, Java, C, C++, HTML, MATLAB, SolidWorks, Microsoft Office
Industry Knowledge: Genomics, Algorithm design, Image data analysis/visualization, Signal and image processing, Statistical analysis, Rapid prototyping, Design of experiments, Image acquisition. *Other*: Fluent in Russian, Marathon runner

PROFESSIONAL EXPERIENCE & RESEARCH

Scientist, Sanofi — 2019-Present

- Acquire and analyze optical imaging, MRI, micro-CT, PET, intravital confocal microscopy, and ultrasound data to investigate whole-body, brain, and bone features in over 1,000 rodents and monkeys
- Develop applications in MATLAB, used by the bioimaging team, to automate data segmentation, analysis, and reporting
- Review and recommend changes to image scanning and reconstruction protocols to improve efficiency and data quality
- Quality check all imaging data and troubleshoot technical problems
- Prepare and administer therapeutic agents through routes i.e. IP, IV, SC, or oral gavage

Research Assistant, Translational Neuroimaging and Systems Neuroscience Lab — 2016-2019

- Designed, executed, and interpreted preclinical experiments to investigate stress phenotypes in over 200 rodents using behavior tests, enzyme immunoassays, and awake functional imaging (fMRI) in a 7-Tesla Bruker scanner
- Analyzed rodent microbiomes using genomics and 16s RNA sequencing to examine stress disorder inheritance
- Developed imaging preprocessing algorithms for motion correction and data visualization using AI and machine learning
- Built devices and wrote protocols to examine inheritance and treatment of stress disorders
- Designed and fabricated a quadrature radiofrequency birdcage coil. Built circuits to integrate the coil and MRI
- Statistically analyzed imaging/behavior data in MATLAB and Excel, collaborating with team members to interpret results

Teaching Assistant, The Pennsylvania State University — 2015-2019

- Courses: Computational Methods, Mechanical Response of Materials, Strength of Materials, Intro. to Engineering Design
- Taught recitations, delivered lectures, hosted office hours, coordinated exam reviews, and created assignments
- Facilitated team design projects to help students learn programming, SolidWorks, and rapid prototyping

Research Assistant, Mechanics and Materials Lab — 2017

- Developed functionally graded polymer-ceramic multilayered dental crown structures for clinical applications
- Examined properties and microstructures with CT, static/dynamic fatigue tests, and nanoindentation

PUBLICATIONS

Verbitsky, A., Dopfel, D., Zhang, N. (2020). Rodent models of post-traumatic stress disorder: behavioral assessment. *Translational Psychiatry*

Dopfel, D., Perez, P. D., Verbitsky, A., Bravo-Rivera, H., Ma, Y., Quirk, G. J., & Zhang, N. (2019). Individual variability in behavior and functional networks predicts vulnerability using a predator scent model of PTSD. *Nature Communications*

UNIVERSITY INVOLVEMENT & PROFESSIONAL SOCIETIES

Society for Neuroscience, Biomedical Engineering Society — 2016-Present

- Verbitsky, A., Dopfel, D., Schlamb, T., Zhang, N. Characterization of predator odor scent stress using a behavioral battery and exploration of inheritance of behavioral phenotypes in Long Evans rats. *Neuroscience 2017*

Vice President, Sigma Xi – The Scientific Research Honor Society — 2018-2019

President & Fundraising Coordinator, Student Health Active Recruitment and Empowerment — 2017-2019

- Supervised a thirty-member organization that connects students with volunteer opportunities at local organizations and fundraised over $30,000 for pediatric cancer within six-months
- Served on the Student Health Advisory Board as a liaison between students and University Health Services Administration

AWARDS AND ACHIEVEMENTS

- Penn State Student Leadership and Service Partisan Award — 2017-2018
- Penn State College of Engineering Research Initiative Scholarship — 2017-2018
- Business Experience for Undergraduates Scholarship — 2017