

Umair Khan

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GitHub: khanu263

Education

B.S. in Computer Science and Mathematics (double major)
Portland State University, Urban Honors College
2017 – 2021 (expected)
GPA: 4.0

Research Experience

Undergraduate Research Assistant

Reichow Lab, Dept. of Chemistry
June 2019 – present
PI: Steve L. Reichow

Using molecular dynamics simulation and computational analysis techniques to understand the structural and functional properties of gap junction proteins. Past work utilized *in silico* mutagenesis experiments to elucidate the energetic and electrostatic significance of the N-terminal domain in Cx46/50. [Lab website.](#)

Undergraduate Research Assistant

Teuscher Lab, Dept. of Electrical and Computer Engineering
December 2018 – present
PI: Christof Teuscher

Studying chemical oscillators as a medium for reservoir computing through stochastic simulation. Past work explored machine learning security and neural network robustness through adversarial methods such as the one-pixel attack. Mentored high school students through summer internship program. [Lab website.](#)

Publications

Papers

B. Yue, B.G. Haddad, **U. Khan**, H. Chen, M. Atalla, Z. Zhang, D.M. Zuckerman, S.L. Reichow, D. Bai. "Connexin 46 and connexin 50 gap junction channel open stability and unitary conductance are shaped by structural and dynamic features of their N-terminal domains," *bioRxiv*, July 2020. doi: [10.1101/2020.07.01.182584](https://doi.org/10.1101/2020.07.01.182584)

Posters

C. Spivey, **U. Khan**, D. Zarfes, S. Hynes, T. Shilts. "Design and Test of the OreSat Cirrus Flux Camera," presented at the **Oregon NASA Space Grant Student Symposium**, Corvallis, Oregon, November 2020.

B. Yue, B.G. Haddad, **U. Khan**, M. Atalla, S.L. Reichow, D. Bai. "Functional Characterization of V_J -gating and Single Channel Conductance of Sheep Cx46 and Cx50 Gap Junctions," presented at the 64th Annual Meeting of **The Biophysical Society**, San Diego, California, February 2020. doi: [10.1016/j.bpj.2019.11.1573](https://doi.org/10.1016/j.bpj.2019.11.1573) (abstract)

U. Khan, W. Woods, C. Teuscher. "Exploring and Expanding the One-Pixel Attack," presented at the **Portland State University Student Research Symposium**, Portland, Oregon, July 2019. Available from [PDXScholar](#).

O. Rew and **U. Khan**. "OreSat Star Tracker: A low-cost open-source attitude determination system for Oregon's first satellite," presented at the **Portland State University Beta Project Symposium**, Portland, Oregon, July 2019.

Other Experience

Software Developer

Portland State Aerospace Society
January 2018 – present

Lead developer for OreSat's star tracking system. Also providing support for the camera system and cirrus imaging projects. Co-author on two successful funding proposals: one from the Beta Project program through the Maseeh College of Engineering and Computer Science, and one from the Undergraduate Team Experience Award Program through the Oregon NASA Space Grant Consortium.

Software Consultant

SawStop, LLC
July 2018 – April 2019

Designed, developed, built, and refined a prototype for a novel positioning system using OpenCV in conjunction with Python and C++. Continued to support the product development process. (Details under NDA.)

Awards and Scholarships

National Computational Science Institute

XSEDE EMPOWER Scholar

Spring 2020, Summer 2020, Fall 2020

Competitive NSF-supported funding awarded to undergraduates performing computationally intensive research.

Maseeh College of Engineering and Computer Science

Undergraduate Research and Mentoring Program Scholar

Fall 2018 – Spring 2019

Competitive undergraduate research program pairing students and faculty advisors for a year-long research project.

Portland State University

President's List

Fall 2017 – present

Awarded to students who achieve a GPA of 4.0 in a given term, with a cumulative university GPA of 3.5 or better.

Portland State University

Rose E. Tucker Honors Scholarship

Fall 2017 – present

Competitive funding awarded to incoming students based on academic merit and potential to excel in the Urban Honors College.

Portland State University

Honors Laurels Scholarship

Fall 2017 – present

Merit-based funding awarded to students in the Urban Honors College.