

Undergraduate and/or Graduate Research Opportunities for international Students at the University of Nevada, Las Vegas

Department of Computer Science

Co-Advising by both Dr. Yoohwan Kim and Dr. Ju-Yeon Jo

- Maximum Number of Interns: 4
- Projects: 1) Computer network emulation with Mininet and Raspberry Pi, 2) Smart contract development on private Ethereum blockchain. 3) Developing a consortium blockchain system with HyperLedger Fabric
- Areas of Expertise Interns Should Have: Good programming background in C/C++ and JavaScript. Self-exploration capability without a step-by-step guidance.

Dr. Justin Zhan

- Maximum Number of Interns: 15
- Projects: Big Data Science
- Areas of Expertise Interns Should Have: Mathematics, Physics, Computer Science, Computer Engineering, and/or Biology.

Dr. Justin Zhan

- Maximum Number of Interns: 2
- Projects: All of my National Science Foundation projects relate to how people invent software. Notably, we do quite a bit of work on how people that are blind or visually impaired invent technologies. Next summer, we're in the process of inventing a technology that allows blind people to create hyper-visual applications without assistance, similar to <https://unity3d.com/>. How that works, and why it works, is a complicated topic, but students would either write documentation for that system or help with some of the programming, depending on their skills.
- Areas of Expertise Interns Should Have: Students in my lab really need to have solid programming skills and I prefer they are strong writers, although with International students we give them some leeway on that. Without solid programming chops, however, they couldn't realistically participate in the research.

Department of Electrical and Computer Engineering

Dr. Biswajit Das

- Maximum Number of Interns: 2
- Projects: Sensors for autonomous vehicles
- Areas of Expertise Interns Should Have: Experience with circuits and ICs, microcontroller programming, and PCB design/fabrication.

Dr. Brendan Morris

- Maximum Number of Interns: 10 (likely would take less after screening)
- Projects: Research areas include artificial intelligence/deep learning, intelligent transportation systems, self-driving cars, and computer vision. Sample projects include
 - 1) Sports quality assessment: deep learning for automated scoring of Olympic events

- 2) Deep trajectory prediction: use of deep learning to predict trajectories (pedestrians, cars, bikes) 5 seconds into the future to supplement self-driving technology
- 3) Baby Face Analysis: computer vision to detect baby emotion, collaboration with Psychology
- 4) Portable face recognition system: design of low power face recognition system using deep learning for portable application
- 5) Self-driving car design: build and test hardware and software for self-driving vehicle.

Areas of expertise interns should have: Minimum requirement is strong programming skills.

Beneficial to have image processing/computer vision background, exposure to machine learning and deep learning, and self-driving car technology (sensors, hardware, software).

Dr. Venkatesan Muthukumar

- Maximum Number of Interns: 8

- Projects: 1) Robotics (SLAM) 2) Unmanned Aerial Vehicles (UAVs) (acoustics and video processing) 3) Image Processing using Depth and 3D Sensors and Hyperspectral cameras 4) FPGA design for Deep Learning 5) Embedded Systems (specifically control) 6) Wireless Sensor Networks.

- Areas of Expertise Interns Should Have: C/C++ Programming, Python, Matlab, Embedded Systems (ARM or any 32-bit processor), Verilog/VHDL (FPGA design), Robotic Operating Systems (ROS), Linux.

Department of Mechanical Engineering

Dr. Paul Oh

- Maximum Number of Interns: 3

- Projects: The projects are in the area of robotics and automation design, research and development, and testing

- Areas of Expertise Interns Should Have: fabrication (e.g. basic machining, 3D printing, CNC) skills, Matlab, CAD (e.g. Solidworks, Pro/E, AutoCad) and programming – all highly recommended, but not a pre-requisite.

Dr. Mohamed Trabia

- Maximum Number of Interns: 4

- Projects: 1) Developing a predictive model for diabetic ulcers 2) Biomechanics of walking under reduced gravity 3) Shock transmission in bolted joints 4) Design of demand-activated rumble strips

- Areas of Expertise Interns Should Have: Developing a predictive model for diabetic ulcers; Biomechanics of walking under reduced gravity (Signal processing; Programming, preferably in Matlab; Computer vision; System Identification; and Basic understanding of biomechanics and dynamics); Shock transmission in bolted joints (Finite Element, preferably in LS-Dyna; Signal processing; Expertise with accelerometers); and Design of demand-activated rumble strips (Signal processing; Expertise with accelerometers; and Data analysis)

Dr. Yi-Tung Chen

- Maximum Number of Interns: 2

- Projects: 1) Heat exchanger design. Knowledge of using ANSYS and Fluent commercial software is highly desirable
- Areas of Expertise Interns Should Have: Fluid mechanics and heat transfer

Dr. Hui Zhao

- Maximum Number of Interns: 2
- Projects: 1) Biosensing 2) Nanotechnology 3) Photovoltaics 4) Biomaterials
- Areas of Expertise Interns Should Have: the knowledge of mechanical engineering, chemical engineering, and electrical engineering

Dr. Woosoon Yim

- Maximum Number of Interns: 2
- Projects: The projects are in the area of autonomous sensing and navigation of small scale robotic flying platforms for source localization and contour mapping.
- Areas of Expertise Interns Should Have: Some knowledge of dynamics/control and programming skills are required. Automatic control, kinematics and dynamics, algorithm development and machine intelligence. Programming skills are required.

Department of Civil and Environment Engineering

Dr. Jee Woong Park

- Maximum Number of Interns: 3
- Projects: 1) Tactile-based communication system for quick signaling to human subjects. 2) Human detection and density estimation by Bluetooth-low energy technology.
- Areas of Expertise Interns Should Have: Programming skill is preferred. Student without programming skills can assist system testing and other relevant activities.

Dr. Ryan Sherman

- Maximum Number of Interns: 1
- Projects: Galena Creek Structural Health Monitoring
- Areas of Expertise Interns Should Have: Structural engineering design courses are preferred. The student would assist in implementing a structural health monitoring system on a bridge in Nevada.

Dr. David James

- Maximum Number of Interns: 2
- Projects: The project is in the area of lake water quality measurements and data archiving, analysis, work up. Field work required for summer 2019
- Areas of Expertise Interns Should Have: The interns should be able to drive vehicles in the US. Expertise in time series analysis, statistics and familiarity with environmental measurements and measurement uncertainty required.

Dr. Eakalak Khan

- Maximum Number of Interns: 2
- Projects: 1) Biodegradability and bioavailability of contaminants in Water 2) Removal of contaminants from water and wastewater

- Areas of Expertise Interns Should Have: Wet chemistry laboratory skills including safe handling of chemicals.

Dr. Jacimaria Batista

- Maximum Number of Interns: 1

- Projects: Environmental engineering research 1) Biological phosphate removal 2) Biological chromate reduction 3) Perchlorate reduction by bacteria.

- Areas of Expertise Interns Should Have: Wet chemistry laboratory skills including safe handling of chemicals; Junior or Senior Student

Dr. Erica Marti

-Maximum number of Interns: 2

-Projects: 1) Collection and analysis of water samples to determine potential for formation of disinfection byproducts, and 2) investigating multiple strategies to reduce trihalomethanes (THMs) in water reservoir tanks. Some projects may involve working with wastewater or untreated surface waters.

-Areas of Expertise Interns Should Have: Environmental engineering, environmental chemistry, or analytical chemistry background. Students must have prior wet lab experience (e.g. chemical handling, pipetting, glassware handling, making solutions). Prior experience with mass spectrometry instruments is preferred but not required.

Dr. Jin Ouk Choi

- Maximum Number of Interns: 3 (in a condition that interns will have their own space/desk for work)

- Projects: 1) Construction Industry Institute's Modular Construction/Standardization 2) National Science Foundation's Construction Workforce 3)University Transportation Center's Planning/managing High-Speed Rail project

- Areas of Expertise Interns Should Have: 1) Basic Knowledge in Construction/Civil Engineering 2) Research interests in Construction Engineering and Project Management 3) English Proficiency

Dr. Ying Tian

- Maximum Number of Interns: 3 (but I cannot provide any office space)

- Projects: the experimental component of my ongoing NSF project: Behavior of reinforced concrete structures near collapse.

- Areas of Expertise Interns Should Have: Must have taken the courses of concrete material and reinforced concrete structures

Dr. Sajjad Ahmad

- Maximum Number of Interns: 3-4

- Projects: Storm water management; climate change; urban hydrology; groundwater change estimation using satellite remote sensing

- Areas of Expertise Interns Should Have: some Matlab programming skills, course work in hydrology, water resources engineering, and GIS will be helpful but not required.

Dr. Alexander Paz

- Maximum Number of Interns: 3

- Projects: 1) The project is about field testing of Demand Responsive Rumble Strips for advanced and safe mobility 2) Interns are requested to help in the statistical analysis of survey data related to public perceptions and opinions of autonomous vehicles

- Areas of expertise interns should have:

Project 1) Major focuses are on collecting traffic field data. Interns might have to drive vehicles on the testing site, driving license is required. In addition, basic knowledge about data collection is required

Project 2) Statistical modeling (discrete statistical modeling preferred)

Dr. Mojdeh Asadollahipajouh

- Maximum Number of Interns: 2

- Projects: 1) Numerical modeling application in general civil/geotech projects (basic softwares: plaxis, geostudio, rocscience, and advanced ones: ls-dyna) that requires familiarity with finite element modeling

2) Conducting non-destructive geophysics tests that requires matlab skills for processing data, knowledge in geotechnical engineering, familiar with soil tests (laboratory and in-situ tests), geophysics, and soil dynamics

- Areas of Expertise Interns Should Have: N/A

Entertainment Engineering and Design

Dr. Si Jung Kim

- Maximum Number of Interns: 6 (2 teams with 3)

- Projects: 1) Augmented and Virtual Reality (AVR); 2) Robotics

- Areas of expertise interns should have:

Programming experience with any computer languages and/or Experience with electronic circuits; Microsoft office programs;