Xiaoxue Han

(she/her/hers)

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EDUCATIONS

Stevens Institute of Technology, Hoboken, NJ
- Ph.D. in Computer Science   August 2021 –
  GPA: 4.0 / 4.0

Related courses: Fundamentals of Machine Learning | Deep Learning | Natural Language Processing |
Advanced Algorithms | Principles of Programming Languages | Algorithmic Complexity

Virginia Polytechnic Institute and State University, Blacksburg, VA
- Master of Science in Mechanical Engineering   August 2018 – May 2020
  GPA: 3.34 / 4.0

Related courses: Probability Distribution Theory | Linear System Theory

University of Arizona, Tucson, AZ
- Bachelor of Science in Mechanical Engineering and minor in Mathematics   August 2014 – May 2018
  Cumulative GPA: 3.40 / 4.0, Major GPA: 3.78 / 4.0

Related courses: Introduction to C language | Matlab I | Matlab II

TECHNICAL SKILLS

- **Programming**: Python, C++, Ocaml, Matlab, Assembly
- **Algorithms**: Machine learning, Deep Learning, Graph Learning, Natural Language Processing, Image Processing
- **Software Packages**: PyTorch, Keras, Tensorflow, Deep Graph Library (DGL), Robot Operator System (ROS)
- **Operating Systems:** Linux, Windows, MacOS

PROFESSIONAL PROJECTS

Dynamic Graph Learning Project, Stevens Institute of Technology   August 2021 – now
Software skills: Python, PyTorch, DGL
- Designed a novel end-to-end framework for societal event forecasting. This framework models both long-term and short-term historical dependencies from past events.
- Modelled events in ICEWS dataset as knowledge graph with DGL.
- Proposed a Graph Neural Network with message passing and aggregating process that capture both event and text information from neighboring nodes.
- Validate proposed framework on the task of societal event prediction on four different countries on ICEWS dataset.

Human Keypoint detection and Robot Arms Manipulation Project, Virginia Tech   February 2019 – May 2021
Software skills: Python, MATLAB, Keras
- Proposed an ensemble-based hybrid neural network system for precise real-time human keypoint detection.
- Developed a dataset with more than 16K images and precise labeling of the location of the cricothyroid membrane.
- Utilized MATLAB to control the KINECT RGB-D camera to collect images. Built a MATLAB GUI program to compile the
labeling and transfer into a JSON file efficiently and effectively.
- Used Python to construct a generator that performed image processing during the training process.
- Enhanced detection precision by 10% by implementing and training the hybrid neural network with Keras.
- Trained a robotic manipulator with Reinforcement Learning techniques.

Semi-autonomous Navigation with Unmanned Ground Vehicle (UGV), Virginia Tech   January 2019 – May 2019
Software skills: ROS, Python, C++
- Build an integrated UGV system that supports the detection of the goal position and transportation to the goal.
- Implemented both the electrical design based on the Arduino board and software design on the ROS.
- Formed and created a real-time User Interface GUI system that consisted of two parts: goal detection implemented with a ROS package, and a goal navigation based on rviz, the 3D visualization tool of ROS.

Surgical Rectal Tonometer Project, University of Arizona   September 2017– May 2018
Software skills: Assembly Language, Solidwork, EAGLE

- Created the prototype of a surgical-used neonate sized rector tonometer for the infants with Cauda Equina Syndrome.
- Designed a PCB board with EAGLE. Improved the design to fit the size of the device.
- Aligned the work of the pressure sensor with the Assembly Language by working on the programming of the microchip boards.
- Designed and 3D-printed the package of the tonometer and a device to calibrate the sensor with Solidwork.

PUBLICATIONS

1. **Han X.,** Ning Y., "Text-enhanced Multi-Granularity Temporal Graph Learning for Event Prediction", *In Proceedings of the 22nd IEEE International Conference on Data Mining (ICDM). Regular Paper. 2022. Orlando, FL, USA. Nov. 28-Dec. 1, 2022.*
   (Acceptance Rate: 9.77%)

2. **Han, X.,** Ren, H., Qi, J., Ben-Tzvi, P., "Autonomous Cricothyroid Membrane Detection and Manipulation Using Neural Networks and a Robot Arm for First-Aid Surgical Airway Management", *Journal of Medical Devices, Transaction of the ASME,* Dec. 2022.

3. **Han, X.,** Ren, H., Ben-Tzvi, P., "Autonomous Cricothyroid Membrane Detection Using Neural Networks for First-Aid Surgical Airway Management", *Proceedings of the 2020 ASME IDETC/CIE, 44th Mechanisms & Robotics Conference.* St. Louis, MO, Aug. 16-19, 2020.

EXPERIENCES

Stevens Institute of Technology, Hoboken, NJ
Graduate Research Assistant   August 2021 – now

Robotics and Mechatronics Lab., Virginia Tech, Blacksburg, VA
Volunteer Research Assistant   May 2020 – May 2021
Graduate Research Assistant   February 2019 – May 2020

Virginia Tech, Blacksburg, VA
Course Grader   January 2020 – May 2020

Mechatronics Lab., University of Arizona, Tucson, AZ
Undergraduate lab Assistant   May 2017 – May 2018

PROFESSIONAL SERVICES

Reviewer for CIKM

AWARDS

NSF Student Travel Award for ICDM   2022
Dean's List of University of Arizona   2018
Dean's List of University of Arizona   2017

REFERENCES

Yue Ning, Ph.D.
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Stevens Institute of Technology
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