Hunter Hawkins, PhD

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EDUCATION

University of Idaho **May 2019 – May 2026**

PhD Computer Science *Coeur d'Alene, ID*

- Defended dissertation "Integrated Machine Learning, Deep Learning, and Hybrid Models for Real-Time Event Preemption in Continuous Manufacturing Processes" February 2026
- 3.95/4.0 GPA, emphasis in explainable Machine Learning and Artificial Intelligence
- Project lead and technical expert on Amalgamated Sugar steam dryer AI project.
- Design, build and maintain all lab equipment for Programmable Logic Controller (PLC) laboratory
- Design and teach cross disciplinary Advanced PLC class from scratch, assist in teaching PLCs 2 semesters

M.S. Computer Science *Coeur d'Alene, ID*

- 4.0/4.0 GPA, Emphasis in critical infrastructure, smart cities, IoT, and embedded systems
- Master's paper published by PacTrans/ USDOT

Graduate Certificate Robotics Engineering *Coeur d'Alene, ID*

- Took graduate level coursework on robotics and automation topics

B.S. Computer Science and B.S Mathematics *Moscow, ID*

- 3.5/4.0 cumulative GPA, Dean's List, Pi Mu Epsilon
- Event coordinator for the automotive enthusiasts club and member of math club

North Idaho College **August 2016 – May 2019**

A.S. Computer Science *Coeur d'Alene, ID*

- Phi Theta Kappa, Dean's List
- Computer Science and Technology Club Member 2017-2019

PROFESSIONAL EXPERIENCE

University of Idaho Center for Intelligent Industrial Robotics **May 2026 – Present**

Research Scientist - Manager of Industrial AI Applications *Coeur d'Alene, ID*

- Partner with industry leaders and local municipalities to identify and source direct, applied student projects in manufacturing, precision agriculture, and robotics. Projects range from undergraduate to PhD level
- Mentor and manage graduate students throughout their projects, providing hands-on guidance across their academic journey
- Develop grant proposals in collaboration with multiple stakeholders to secure funding for applied, real-world student projects
- Plan and support community outreach events to engage the public and strengthen partnerships

Wapiti Consulting **May 2021 – Present**

Software Development Manager & Grants Specialist *Hayden, ID*

- Develop custom real-time, web-based SCADA systems using Python and Django for water and water-reclamation municipal clients
- Support the startup of 15+ ASR well systems for multiple municipalities across the western United States
- Upgrade PanelView RV Park from a $1M investment to a $4M valuation by delivering custom software solutions including autonomous check-in, smart keypads, and power/water monitoring
- Implement cloud-based cellular MQTT communication between remote booster stations and reservoirs using industrial PCs interfacing with PLCs

- Built data collection software for the Aquifer Pumped Hydro pilot project in Kern County, California
- Develop PLC/HMI/VFD software for Allen-Bradley, Schneider Electric, Red Lion, and other control platforms
- Manage a software development team and co-manage a technician assembly team to meet deadlines with a high quality control
- Maintain a customer-focused approach with operators and municipal stakeholders
- Design, build, and troubleshoot UL 508A industrial control panels; UL 508A certified

NASA **May 2020 – May 2021**
Software Engineer Intern (NESSP) *Remote*
- Led the initial design/development of a robot controlled lunar lava tube sealant process via a Hoberman sphere
- Recruit and manage a team from North Idaho College and assist with technical features of their rover

University of Idaho Mathematics/ Computer Science **September 2019 – May 2021**
CS / Math Lab Teacher *Moscow, ID*
- Assisted fellow students in basic to complex problems in computer science and mathematics

Kootenai Girls Softball Association **May 2012 – July 2019**
Umpire *Coeur d'Alene, ID*

Tomato Street CDA **June 2016 – August 2019**
Busser / Dishwasher *Coeur d'Alene, ID*

PROJECT EXPERIENCES

Amalgamated Sugar Explainable AI PhD Project **August 2023 – May 2026**
PhD Researcher *Coeur d'Alene, ID*
- Gathered data from the dataPARC historian and formatted it with the Python libraries of NumPy and Polars
- Trained 6 models on the data including an AdaBoost ensemble model, custom time offset AdaBoost ensemble model, a long short term memory (LSTM) model, N-BEATS, a temporal fusion transformer, and a hybrid model combining AdaBoost decision tree ensembles and LSTM
- Performed custom time scoring on trained models with best models predicting over 75% of issues in advance
- Built a custom Django dashboard that would display issues to the operators including the ability to dynamically change between models
- Integrated with OPC UA server to pull real-time data
- Worked closely with Amalgamated Sugar process engineers to ensure success of project

Leo J Vander Lans Advanced Water Treatment Facility **May 2024 – Present**
Wapiti Consulting - Assistant Project Lead *Long Beach, CA*
- Installed an injection well to redirect excess treated wastewater into the aquifer, generating power while supporting aquifer recharge and restoration
- Helped manage the design and development of industrial control panel; was a major contributor to the PLC, VFD, and HMI software development
- Managed the development of custom Python data logging software to gain historical insights into the process and its impacts

Kootenai County Water District #1 & Syringa Heights **December 2021 – Present**
Wapiti Consulting - Assistant Project Lead *Kootenai County, ID*
- Small and rural water districts that serve over 600 households combined

- Help manage all phases of multidisciplinary projects for two local water districts including: industrial control panels (10+), software development, systems integration, emergency fixes and many other duties
- Work with numerous stakeholders including water operators, engineering firms, electricians, and other entities to maximize uptime available for the public
- Developed a completely custom low-cost and low-bandwidth communications architecture leveraging MQTT and cellular connectivity. Actively being developed into a research paper

Willow Springs 50KW and 200KW Aquifer Pumped Hydro Pilot Projects **May 2021 – Present**
Wapiti Consulting - Assistant Project Lead *Lancaster, CA*

- California Energy Commission (CEC) funded pilot project to use four injection wells for long term power generation with blackstart capabilities
- Significant contributor to the PLC, VFD, HMI, and Python based data logging and communications software development along with industrial control panels
- Recently (July 2026) began assisting on grant reporting documents

Panelview RV Park **May 2021 – Present**
Wapiti Consulting - Software Lead *Echo, OR*

- Green RV park which utilizes various smart technologies to be near self-sufficient. Including an automated check-in system, automated power shut off, smart laundry and bathrooms, and various other features
- Developed custom Python & Django historian and SCADA system which manages all smart aspects of the park along with data collection
- Currently working on automated license plate reading and vehicle detection; additionally, architecting software to use machine learning to predict peak power demands for dynamic battery activation

City of Santa Monica, Well SM-11i **May 2024 – January 2026**
Wapiti Consulting - Assistant Project Lead *Santa Monica, CA*

- Installation of an injection well which takes excess city water and injects that into the aquifer to replenish the water table and improve the health of the aquifer
- Contributed to PLC, VFD, and HMI software development
- Performed system startup and operator training, January 2026

Mark Anthony Brewery **April 2023 – November 2025**
Wapiti Consulting - Assistant Project Lead *Waddell, AZ*

- Installation of two injection wells which inject treated process water with HVAC water into the aquifer to increase aquifer health
- Developed PLC, HMI, and VFD Programming along with the building of the industrial control panel
- Performed system startup and operator training, May 2024

Monterey One Water **May 2021 – May 2025**
Wapiti Consulting - Assistant Project Lead *Monterey, CA*

- Installation of 6 injection wells which inject treated wastewater into the aquifer to increase the available groundwater supply
- Key contributor to PLC, HMI, and VFD software
- Performed system startup and operator training in two well increments
- The project has more than doubled the drinking water supply for the residents of Monterey and Salinas California

City of The Dalles, Riverside Well 2 **February 2024 – July 2024**
Wapiti Consulting - Assistant Project Lead *The Dalles, OR*

- Start up and commissioning of injection well for the city of The Dalles, Oregon to integrate with Google data

center
- Developed PLC and HMI programming to control the injection well and communicate with SCADA

NIATT / PacTrans / U.S. DOT MS Project **August 2021 – May 2023**
M.S. Researcher *Coeur d'Alene, ID*
- Developed a survey paper aimed at helping small municipalities implement smart city projects with minimal expertise (IoT Platforms for Smart City Implementation in Rural and Urban Communities: A Comprehensive Review)
- Worked with multidisciplinary team including a civil engineering and cybersecurity advisor
- Publication by U.S D.O.T and PacTrans and conference presentation

Wapiti Consulting Website **May 2026 – Present**
Wapiti Consulting - Project Lead *Coeur d'Alene, ID*
- Company website built with Django web development framework which includes personnel and project portfolios along with a customer portal

Personal Website **August 2021 – Present**
Personal Project *Coeur d'Alene, ID*
- Personal project built with Django web development framework

TEACHING EXPERIENCE

- University of Idaho Advanced Programmable Logic Controllers and Automation**: Spring 2024 (Instructor)**
- University of Idaho Programmable Logic Controllers and Automation: **Spring 2023 (Assistant), Fall 2024 (Assistant), Fall 2026 (Instructor)**

ADVISED GRADUATE STUDENTS

- Brent Knopp (Committee Member): AI-driven optimization of critical lumber mill operations to improve efficiency and throughput **May 2026 – Present**
- Dan Blanchette (Committee Member): Preemptive AI predictions for dissolved oxygen in industrial wastewater treatment facilities **August 2026 – Present**

PUBLICATIONS

- (Ongoing Development) Hawkins, H., Onyeoguzoro, D., Blanchette, B., Lybeck, T., Johnson, M., Shovic, J., & Everett, M. (2026) A Novel Low-Cost Cellular and MQTT Based Communications Architecture for Low Bandwidth Rural Water Districts
- (Under Review by Elsevier's Array Journal) Hawkins, H., Shovic, J., & Everett, M. (2026). M. Real World Deployment of an Explainable Artificial Intelligence Predictive Appliance (AIPA) for Industrial Steam Dryers in Sugar Beet Manufacturing
- Hawkins, H., Sheldon, F., & Abdel-Rahim, A. (2022). Internet of Things (IoT) platforms for smart city implementation in rural and urban communities: A comprehensive review. Pacific Northwest Transportation Consortium. https://rosap.ntl.bts.gov/view/dot/67581

PROPOSALS

- (Ongoing) A Generalized Low-Cost Human Detection System for Bridge Suicide Prevention; Partnership between University of Idaho (Research Team), and Idaho Transportation Department (Municipality) with support from the Idaho State Police, Kootenai County Sherriff's Office, Kootenai County Coroner's Office,

and Senator Mike Crapo; **PI, $120,000**

- (Under Review-Submitted 07/08/2026) Data Collection and Demand Forecasting for Kootenai County Water District #1; Partnership between University of Idaho (Research Team), Kootenai County Water District #1 (Municipality), Wapiti Consulting (Private Entity); **PI, $317,900**

CONFERENCE PRESENTATIONS

- National Groundwater Week 2026: Python, MQTT, and Cellular Connectivity for Low-Cost Rural Water District Communications **December 8th-10th 2026 (Upcoming)**
- American Society of Civil Engineers Artificial Intelligence in Civil Engineering: Explainable Artificial Intelligence Solutions for Industry and Water **October 15th 2025**
- 2025 American Ground Water Trust - American Water Resource Association Washington Chapter Northwest Groundwater Conference: Aquifer Storage and Recovery with Power Regeneration: Permitting and Installation Strategies **March 19th 2025**
- National Groundwater Week 2024 (Co-Author/Presenter): Aquifer Storage and Recovery Generation During the Injection Cycle for Energy Saving During Recover **December 10th 2024**
- 2022 PacTrans Region 10 Transportation Conference: Internet of Things Platforms for Smart City Implementation in Rural and Urban Communities: A comparative Review **October 14th 2022**

SKILLS, INTERESTS and CERTIFICATIONS

- **Skills:** AI / ML, Python Programming, Networking, PLC / HMI / VFD Programming, Django, Industrial Controls, Embedded Systems, Electrical Wiring, MQTT, Systems Integration, SCADA, Systemd, Nginx, Gunicorn, Netplan
- **Interests:** Family time, Football, Jiu Jitsu / Wrestling / MMA, Investing, Hobby Farming
- **UL508A MTR Certification:** Underwriters Laboratories standard for safe construction of industrial control panels. Transformers, branch circuits, SCCR, Motor FLA, etc.
- **University of Idaho Graduate Robotics Engineering:** Took courses on Robotics, SCADA, PLC programming and Real Time Operating Systems.
- **Rockwell Automation CCP146:** Studio 5000 Logix Designer Level 1 Programmer
- **Rockwell Automation CCP151:** Studio 5000 Logix Designer Level 2 Programmer
- **Rockwell Automation EK-ICM101-EL:** Vibration Analysis Fundamentals