# McKay Shields

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**BS Applied Computation Mathematics Emphasis (ACME)**    **April 2025**
**Brigham Young University**    Provo, UT

**Relevant Courses:**

- Minor: Computer Science
- College GPA: 4.00
- Russell M. Nelson Scholarship Recipient
- ACT Composite: 35

- Data Structures
- Advanced Programming
- Mathematical Modeling
- Statistics

- Linear Algebra
- Multivariable Calculus
- Differential Equations
- Complex Analysis

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## SKILLS

- Advanced Python
- C++ Programming
- Linux and Unix
- ROS and ROS 2
- Natural Language Toolkit
- Linear Optimization

- Gradient Descent
- Wavelets
- Fourier Analysis
- Particle Filters
- Gaussian Quadrature
- Bayesian Modeling

- Neural Networks/Deep Learning
- Machine Learning
- Hidden Markov Models
- Optimal Control
- State-space Models/Kalman Filter
- Dynamical Systems

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## PROFESSIONAL EXPERIENCE

**R&D Engineering Intern**    **May 2024 - August 2024**
**UtopiaCompression Corporation**

Developed localization algorithms for ground vehicles and drones using a Kalman filter. Integrated sensor fusion for autonomous navigation using known landmarks in a ROS Gazebo simulation environment. Assisted in machine learning model to predict trajectory of target vehicles.

**NLP Developer**    **April 2023 - May 2024**
**FRoSt Labs (Field Robotics)**

Developing software that enables biologists to directly interact with underwater robots, specifying data collection requirements and extracting information from a text or query. Primarily centered on Natural Language Processing (NLP) and interpreting data from texts about underwater ecosystems. Leveraging linear algebra and machine learning methods to build knowledge graphs and topic models.

**Audiovisual Technician**    **June 2022 - Present**
**Brigham Young University OIT**

Technological support for a wide range of audiovisual needs in classrooms and events across the campus. Provided professional customer service by promptly addressing technical issues and assisting users with troubleshooting during events and presentations. Skills included sound mixing, teleprompting, and speaker/microphone setup, ensuring optimal audiovisual experiences.

**Research Assistant**    **April 2022 - April 2023**
**BYU Math Department**

Research under Dr. Jen Brooks to study the behavior of families of complex harmonic polynomials. Using theorems of complex analysis and plotting techniques to determine and show existence of roots. Coauthored and presented at BYU Student Research Conference. Skills include complex analysis, proof methods, Mathematica, presenting findings, journal publishing techniques.

**Private Tutor**    **November 2018 - Present**

Teaching for high school and intermediate students in one-on-one and group settings. Focused on homework assistance in math and science classes, and coaching in ACT preparation.

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## AWARDS

**Russell M. Nelson Scholarship Recipient**
Highest Academic Scholarship BYU

**Brigham Young University Dean's List (2022,2023)**
College of Mathematical and Physical Sciences

**STEM Innovator of the Year (2017)**
Thanksgiving Point Youth Recognition Award
for teaching robotics classes to kids.

**Chalk the Block Utah (2022)**
Led a team of artists to win People's Choice
Award in chalk art competition for local charity.