

Christian B. Hughes

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EDUCATION

Czech Technical University (ČVUT)

B.S. in Informatics

Prague, Czechia

Expected Graduation, Jun 2026

- o **Specialization:** Theoretical Computer Science
- o **Related Coursework:** Data Structures & Algorithms, Statistics & Applications, Combinatorics, Graph Theory, Complexity Analysis of Algorithms, Mathematical Analysis, Object-Oriented & Functional Programming

University of Central Florida

B.S. in Mechanical Engineering

Orlando, Florida

Aug 2022 – May 2023

Allen D. Nease High School

Ponte Vedra, Florida

Aug 2017 - May 2022

EXPERIENCE

Northrop Grumman

Engineering Intern

St. Augustine, Florida

Oct 2020 – May 2022

- Engaged in the group development of pneumatic exoskeleton legs for use in industrial settings
- Programmed an ARM-based microcontroller in C to control solenoid systems for pneumatic actuation
- Modeled exoskeleton components in Fusion 360 to create specifications for submission to the facility fabrication shop
- Presented project progress to an audience of facility engineers and managed the budget for exoskeleton development

PROJECTS

Research in Symbolic Dynamics

Research Collaborator

Prague, Czechia

Ongoing

- Investigating problems concerning special types of dynamical systems with a professor of mathematics
- Published peer-reviewed and original work advancing knowledge of open questions in the field
- Advanced highly-specialized mathematical understanding

Linear Algebra and Machine Learning Library

Co-Author

Prague, Czechia

Jun 2024 – Sep 2024

- Employed the Agile workflow to collaboratively develop a linear algebra library in C++ without external libraries and published publicly on GitHub
- Implemented complex algorithms like singular value decomposition and facial recognition using eigenfaces
- Successfully deployed and tested machine learning algorithms, including logistic regression and OLS regression

Matrix Analysis Paper

Author

Prague, Czechia

Jun 2024

- Leveraged knowledge from an advanced linear algebra class and studies in analysis on metric spaces to write a seventeen-page paper discussing the continuous approximation of matrix functions, ultimately leading to a research offer with a mathematics professor in the application of C* algebras to neural networks
- Investigated mathematical tools that enable explicit approximation of functions carrying multivariate data, enabling insights into the approximation of complex systems

ACTIVITIES AND LEADERSHIP

Czech Technical University Faculty of Information Technology

Teaching Assistant for Linear Algebra 1 and 2

Prague, Czechia

Aug 2024 – Present

Florida State Science and Engineering Fair

Placed Third in Engineering Category

Lakeland, Florida

Mar 2019

- Designed, programmed, and fabricated an upper-body exoskeleton chassis as a second-year high school student

SKILLS

Mathematics: Real & Functional Analysis, Linear Algebra, Group & Ring Theory, Semigroup Theory, Topology, C* Algebras

Programming Languages: C++, C, Python, Racket, Prolog, Matlab

Tools & Frameworks: LaTeX, NumPy, Pandas, Tensorflow, Jupyter Notebooks, Git, Google Colab, Agile

Languages: English (Native), Czech (B1), Spanish (A2)