Christian B. Hughes

US Citizen | christian.b.hughes@gmail.com | +420 604 699 815 | LinkedIn: christianbhughes | GitHub: cbhughes29

EDUCATION

Czech Technical University (ČVUT) — **Prague, Czechia**
B.S. in Informatics — *Expected Graduation, Jun 2026*

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

University of Central Florida — **Orlando, Florida**
B.S. in Mechanical Engineering — *Aug 2022 – May 2023*

Allen D. Nease High School — **Ponte Vedra, Florida**
Aug 2017 - May 2022

EXPERIENCE

Northrop Grumman — **St. Augustine, Florida**
Engineering Intern — *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 — **Prague, Czechia**
Research Collaborator — *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 — **Prague, Czechia**
Co-Author — *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 — **Prague, Czechia**
Author — *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 — **Prague, Czechia**
Teaching Assistant for BIE-LA1 and BIE-LA2 (Linear Algebra 1 and 2) — *Aug 2024 – Present*

Florida State Science and Engineering Fair — ***Lakeland, Florida***
Placed Third in Engineering Category — *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)