# CHRISTIAN B. HUGHES

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## EDUCATION

**Czech Technical University in Prague** — **Prague, Czech Republic**
B.S. in Informatics — Aug 2023 - Present

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

**University of Central Florida** — **Orlando, Florida**
Studies in Mechanical Engineering — Aug 2022 - May 2023

**Allen D. Nease High School** — **Ponte Vedra, Florida**

## EXPERIENCE

**IEAP Prague + CERN ATLAS** — **Prague, Czech Republic**
Machine Learning Research Assistant — Feb 2025 - Present

- Developing novel approaches to Higgs boson mass reconstruction using ML models
- Collaboratively applying cutting-edge techniques in machine learning, including genetic algorithms and physics-informed neural networks

**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
- Presented project progress to an audience of facility engineers and managed the budget for exoskeleton development

## ACADEMIC WORKS

**Francesco Dolce, Christian B. Hughes**. *Clustering of Return Words in Languages of Interval Exchanges. Lecture Notes in Computer Science*, vol. 15729, Springer. 2025

**Francesco Dolce, Christian B. Hughes**. *Extended Branching Rauzy Induction.* Preprint. 2025

## TEACHING

**Teaching Assistant, Czech Technical University in Prague** — **Prague, Czech Republic**
Core mathematics courses (Linear Algebra I/II, Mathematical Analysis I/II) — Fall 2024 - Present

- Led weekly problem and theory sessions, including board proofs, worked examples, and exam reviews.
- Courses: Linear Algebra I (Fall 2025, Fall 2024), Linear Algebra II (Spring 2025), Mathematical Analysis I (Spring 2025), Mathematical Analysis II (Fall 2025).

## SKILLS

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|---|---|
| **Mathematics:** | Symbolic dynamics, dynamical systems, real & functional analysis, linear algebra, group & ring theory, semigroup theory, topology, C*-algebras |
| **Programming:** | 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) |