

# Caleb Koch

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## EDUCATION

**Cornell University**, College of Arts and Sciences, Ithaca, NY  
Bachelor of Arts, Computer Science & Mathematics

**Expected May 2020**

**Galileo Magnet High School**, Danville, VA  
International Baccalaureate Diploma, Advanced High School Diploma  
GPA: 4.0/4.0, Class rank: 1/64

**May 2016**

**Relevant Courses:** Discrete Structures, Probability Models and Inference, Object Oriented Programming and Data Structures, Theoretical Linear Algebra and Calculus, Number Theory, iOS App Development, Introduction to Logic

## RELEVANT EXPERIENCE

**CU Sail**, Cornell University, Ithaca, NY, *Navigation Team Member*

**Aug. 2016 - Present**

- Designing and constructing an autonomous sailboat
- Implementing algorithms in C to assess directional instability

**Mathematics Department**, Cornell University, Ithaca, NY, *Course Assistant*

**Aug. 2016 - Present**

- Course assistant for Math 1120 (Calculus II)
- Lead weekly homework study sessions and help grade homework assignments

**US Army Corps of Engineers**, Alexandria, VA, *Research Intern*

**June - Aug. 2016**

- Researched interpolation techniques for mining trajectory data
- Developed software in Java to test interpolation techniques, analyzed results in R
- Presented research at the Engineering Research and Development Center

**National Institute of Aerospace**, Hampton, VA, *Research Intern*

**June - July 2014**

- Implemented PelcoD communication protocol on an Arduino platform for an infrared sensor on a UAV
- Fabricated ornithopter tail and wing components and revised lab procedures for ornithopter construction
- Prepared 25-page report documenting research

## SPECIALIZED SKILLS

**Programming Languages:** Java, C++, Swift, HTML, Markdown, R, LaTeX, Python

**Tools:** Arduino, R Studio, Git, Pandoc

**Laboratory Skills:** PCR, DNA microarray analysis, gel electrophoresis, titration, microscopy

## PAPERS/PUBLICATIONS/PROJECTS

**Identifying and Assessing Interpolation Methods for Mining Trajectory Data** (2016), *ResearchGate*. DOI: 10.13140/RG.2.2.33049.01123.

- Presents major findings from research at the US Army Corps of Engineers

**A Probabilistic Method for Predicting Stochastic Behavior in Conway's Game of Life** (2016), *Complex Systems*. Under Review for publication.

- Developed a probabilistic model to analyze behavior of cellular automaton systems
- Awarded 2016 Intel STS Research Report Award

**Reducing Angular Velocity by Means of Electromagnetism** (2015), *Virginia Junior Academy of Science*. DOI: 10.13140/RG.2.1.3834.2241

- Documents design and construction of an electromagnetic brake for a bicycle
- Article featured on Instructables ([instructables.com/id/Designing-and-Testing-an-Electromagnetic-Braking-S/](http://instructables.com/id/Designing-and-Testing-an-Electromagnetic-Braking-S/))

**Chemistry Made Easy!** (2014), Google Play. Mobile Application.

- Developed an app to serve as a chemistry calculator

## AWARDS

- **Jack Kent Cooke Scholar, 2016:** National merit scholarship to cover cost of college
- **Intel Science Talent Search 2016 Research Report Award:** Awarded for research on cellular automata
- **Virginia Mathematics Champion, National Beta Club, 2015:** Placed 1<sup>st</sup> in state mathematics competition