Arthur H.P. York

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Education

2017

Computer Science - Systems, *Oregon State University*, Corvallis, Senior.
A general ABET accredited computer science degree that focuses on hardware interactions and low-level programming.

- **Expected Graduation**: June 2021
- **Current GPA**: 4.0
- **Completed Coursework**

  - Analysis of Algorithms
  - Data Structures
  - Operating Systems 1 & 2
  - Numerical Analysis
  - Linear Algebra 1 & 2
  - Discrete Mathematics
  - Software Engineering 1 & 2
  - Differential, Integral, and Vector Calculus
  - Digital Logic Design
  - Computer Architecture and Assembly Language
  - Introduction to Graph Theory
  - Introduction to Cryptography

- **Programming Language Proficiencies**

  - Julia
  - C/C++
  - Python
  - Java
  - Bash
  - AVR Assembly
  - Haskell
  - Javascript

Work and Research

2018

Molecular Simulator, *Oregon State University*, SimonEnsemble Research Group.
Working with SimonEnsemble/PorousMaterials.jl software package.

- Adding functionality to `PorousMaterials.jl` such as grand-canonical Monte Carlo simulations, visualization of bonding sites, and storing bonding information for frameworks.
- Created docs site that updates every time pull requests to the master branch are approved.
- Set up continuous integration and code coverage for this repository with Travis-CI and Coveralls.

2018

Computer Science Teaching Assistant, *Oregon State University*.

- Responsible for grading student assignments, holding office hours, and running lab sections with 1-2 other teaching assistants.
- Help students debug code by walking through logic with them during office hours.
- Work with up to 30 students and debug issues one-on-one.
- Follow students through the CS160, 161, and 162 classes throughout the year.

Publications

July 2019

Understanding gas Storage in Cuboctahedral Porous Coordination Cages, *Journal of the American Chemical Society*.

Gregory Lorzing, Eric Gosselin, Benjamin Trump, Arthur York, Arni Sturluson, Casey Rowland, Glenn PA Yap, Craig M Brown, Cory M Simon, Eric D Bloch

- Added functionality to `PorousMaterials.jl` that allows the user to create "snapshots" of the gas molecules adsorbing inside crystal structures to find potential bonding sites.
- Because the porous coordination cages were not crystalline, there was a lot of noise during x-ray diffraction and adsorption sites could not be found. By using `PorousMaterials.jl` the adsorption sites were found for a single unit cell.

May 2019

Curating Metal-Organic Frameworks to Compose Robust Gas Sensor Arrays in Dilute Conditions, *ChemRxiv*.

Arni Sturluson, Rachel Sousa, Yujing Zhang, Melanie T Huynh, Caleb Laird, Arthur HP York, Carson Silsby, Chih-Hung Chang, Cory M Simon

- Used adsorption characteristics of metal-organic framework pairs to determine the response from changes in gas composition.
- Used singular value decomposition to quantitatively show how robust a metal-organic framework pair is for detecting certain gas compositions.

December 2018

Eigencages: Learning a Latent Space of Porous Cage Molecules, *ACS Central Science*.

Arni Sturluson, Melanie T. Huynh, Arthur H. P. York, and Cory M. Simon

- Probed crystal structures using `PorousMaterials.jl` to create 3D porosity images.
- Stored porosity images for different porous cage molecules as vectors, then used the singular value decomposition to create a set of "eigencages" similar to the eigenfaces project.
- Showed that the model is accurate by constructing the original porous molecules as linear combinations of the eigencages.

Presentations

October 2018

Screening Metal-Organic Frameworks for Methane Gas Adsorption Using the Grand-Canonical Monte Carlo Algorithm, *Honors College Showcase - OSU150 Land Grant Festival*, Oregon State University, Lightning Talk.

- Invited by LeeAnn Baker (director of Student Success for the Honors College) to give a lightning talk for Oregon State's 150th anniversary at the Honors college.
- Adapted poster presentation from the Summer Undergraduate Research Symposium to a lightning talk.

September 2018

Screening Metal-Organic Frameworks for Methane Gas Adsorption Using the Grand-Canonical Monte Carlo Algorithm, *Summer Undergraduate Research Symposium*, Oregon State University, Poster Presentation.

- Made poster covering work done in Summer 2018 as part of URSA program.
- Discussed grand-canonical Monte Carlo simulation and screening of metal-organic frameworks for high gas adsorption.

Awards and Honors

2020 **RISE Germany Intern**, *DAAD RISE*, Germany.
- Awarded RISE Germany internship to work with Tobias Hardes at Paderborn University during the Summer of 2020.
- Internship was cancelled due to the COVID-19 pandemic.

2020 **Fulbright Canada Finalist**, *Foundation for Education Exchange Between Canada and the United States of America*, Ottawa.
- Accepted to the Fulbright Canada program, but cancelled due to the COVID-19 pandemic.

2018 **URSA Engage Participant**, *Oregon State University*, Corvallis.
- Gave undergraduate students the opportunity to conduct research with faculty.
- Worked with Dr. Cory Simon to implement grand-canonical Monte Carlo simulations for gas adsorption in metal-organic frameworks in `PorousMaterials.jl`.

2017 **Presidential Scholarship**, *Oregon State University*, Corvallis.
- Awarded to a handful of accepted high school seniors based on high school academic record and Oregon State college application.

2017 **Engineering Dean's Scholarship**, *Oregon State University*, Corvallis.
- Awarded to incoming freshmen in the College of Engineering at Oregon State based on high school academic record and Oregon State application.

2016 **National Merit Finalist**, *National Merit Scholarship Corporation*.
- Named as semi-finalist in 2016 after scoring 1490 on PSAT/NMSQT. Became finalist in early 2017.