Annika Salmi

Incoming MPhil student at Cambridge in Planetary Sciences and Life in the Universe. I'm interested in using my simulation engineering background to model planetary atmospheres.

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Education

2024 - present **Trinity Hall, Cambridge University**
MPhil in Planetary Sciences and Life in the Universe

2017 - 2021 **Yale University**
Bachelor of Science in Astronomy, and Bachelor of Science in Physics
- GPA: 3.6/4.0 (UK 2:1 equivalent)
- Undergraduate Thesis Title: Correlating mapped nuclear dust with AGN obscuration
- Example Coursework: Astrostatistics and Data Mining; Scientific Computing in Astrophysics; Research Methods in Astrophysics; Exoplanets and Data Science

Summer 2020 **Princeton University: Physics of Life Summer Program**

Technical Skills

Skills Cleaning and analyzing astronomical images, generating synthetic images, scientific and big data cloud computing, satellite filtering algorithms, scientific writing

Languages
Python: 6 years
C++: 3 years
R: 2 years
Bash/Unix scripting: 4 years
MATLAB: 2 years
YAML: 2 years

Software tools
Astronomy: DS9, FITS
Aerospace: Freeflyer
Synthetic images: Blender, cuda
Developer: Git, Jira
Cloud: Google Cloud, Kubernetes, Docker, AWS

Work Experience

Aug 2022 - June 2024 **Simulation Engineer**, **Starfish Space**, Seattle, WA
- Wrote the company tool that uses on-orbit data to determine the current location of the satellite in orbit. Used this tool to determine physics simulation accuracy.
- Modeled low Earth orbit physics in a Basilisk physics simulation to solve for drag.
- Added hot pixels, cosmic rays, and more to synthetic Blender satellite images to train the navigation model. Created multiple images as part of this iterative process.
- Created pipeline to process and clean on-orbit data to analyze on the ground.
- Improved simulation performance by rewriting slow algorithms, by tailoring cloud tools, and changing build processes. Also improved simulation UI.

Sep 2020 - Dec 2021 **Research Assistant, Urry Lab,** Yale University
- Mapped galaxy dust distributions of 109 galaxies with active galactic nuclei (AGN) to determine whether dust obscured X-ray radiation from the AGN. Created an algorithm to combine IR and optical Hubble images to show galactic dust.
- Created a GitHub software package for creating attenuation (dust) maps of galaxies.
- Presented at a senior thesis Mellon Forum; funded by the Richter Memorial Fund.

2019 - 2020 **Research Assistant, Newburgh Lab,** Yale University
- Created channel telescope frequency versus intensity graphs of well-known bright stars on the Canadian Hydrogen Intensity Mapping Experiment (CHIME) to find telescope accuracy. Found frequency channels that were over- and under-measuring intensity; results calibrated telescope.
- Research done with Cedar supercomputer; funded by the Richter Memorial Fund.

Fall 2018 **Museum Assistant in Paleobotany**, Peabody Museum, Yale University
- Updated online database to track specimen lending to peer institutions.
- Reorganized the paleobotany collection to reflect the latest science.

Spring 2017 **Docent**, Exploratorium Museum, San Francisco
- Explained exhibits to visitors in San Francisco's premier hands-on science museum.

Winter 2016 **Joint Antarctic Science Expedition**, King George Island, Antarctica
- Cross-cultural research expedition with other Chilean students to Antarctica.
- Funded by the National Science Foundation; one of four Americans selected.

Skills & Activities

Science Communication Volunteering

2023 - 2024 **Volunteer Docent**, The Museum of Flight, Seattle, WA
- Present facts about the Museum of Flight's model of the Space Shuttle.

2017 - 2021 **President**, Yale StarLab, New Haven, CT
- Wrote and presented planetarium shows in a portable planetarium in schools.
- Taught Yale students how to effectively communicate science to youth.

2013 - 2017 **Docent**, California Academy of Sciences, San Francisco, CA

Science Writing

2020 - 2021 **SciTech Desk Writer**, Yale Daily News
- Articles such as "New study reveals black holes are spinning like crazy"

Fall 2020 **Writing Intern**, Study Breaks
- Articles such as "4 Science Fiction Novels That Explore Life on Venus"

Interests

Spring 2024 **Captain, Ski Racing YFAST,** City League Seattle
- Captained a local ski racing team in Seattle. Organized logistics to and from races.

2017 - 2021 **Yale Free & Alpine Ski Team**
- Captain from 2019-2020
- Coached teammates and led the team to an overall finish of second place.

2017 - 2021 **Broadcast Radio DJ**, WYBC Yale Broadcasting Corporation
- Present weekly live show on new alternative music

Languages: English (native), Spanish (fluent), French (advanced), Portuguese (intermediate)
Dual citizen of USA & Finland. Holder of UK student visa