Isabella Hinks

+01-9199244431 irhinks@ncsu.edu isabellahinks iHinks

EDUCATION

Ph.D. in Geospatial Analytics **2020 – 2023**
North Carolina State University
Advisor: Josh M. Gray

B.Sc. in Computer Science and Environmental Science **2016 – 2020**
University of North Carolina at Chapel Hill
Minor, Statistics & Analytics
Carolina Scholar (Merit Scholarship)

TEACHING EXPERIENCE

Guest Lecturer **Oct 2020 – Present**
Geospatial Data Mining (GIS 713) *NC State University*
- Supervised & Unsupervised Classification
- Hands-On Introduction to High Performance Computing

Earth from Space (ES 113) *NC State University*
- The Cryosphere

K-12 classes & social groups for disabled adults *Skype a Scientist*
- Computer science, remote sensing, climate change, agriculture

Coding Workshop *CATALYST (STEM for Disabled Students)*
- Exploring Satellite Imagery with Google Earth Engine

STEM Day *NC Math and Science Education Network*
- What's in an Image?

Learning Assistant **Jan 2020 – May 2020**
Data Science for Earth (COMP 590) - UNC Chapel Hill *Chapel Hill, NC*

Head Undergraduate Teaching Assistant **Aug 2019 – Dec 2019**
Introduction to Programming (COMP 110) - UNC Chapel Hill *Chapel Hill, NC*

Undergraduate Teaching Assistant **Jan 2017 – Dec 2018**
Introduction to Programming (COMP 110) - UNC Chapel Hill *Chapel Hill, NC*

Teaching Assistant **Aug 2017 – May 2018**
Girls Who Code *Chapel Hill, NC*

PUBLICATIONS

Hinks, I., Gray, J.M., and Jain, M. (In Preparation). Delineating smallholder fields from satellite imagery using spatio-temporal convolutional networks.

Hinks, I., Gray, J.M., Reich, B.J., Gao, X., and Jain, M. (In Preparation). Monitoring crop development in smallholder farms using remotely sensed time series data augmentation.

Mei, W., Wang, H., Fouhey, D., Zhou, W., **Hinks, I.**, Gray, J.M., Van Berkel, D., and Jain, M. (2022). Using Deep Learning and Very-High-Resolution Imagery to Map Smallholder Field Boundaries. *Remote Sensing*. 10.3390/rs14133046

Gao, X., McGregor, I.R., Smith, O., **Hinks, I.**, and Shisler, M. (2022). The blsp R package with a Bayesian land surface phenology model (1.0). *Zenodo*. 10.5281/zenodo.6824017

Roy, S., Swetnam, T.L., **Hinks, I.**, Avery, R., Shean, D., Lukach, A., and Henderson, S. (2021). tyson-swetnam/porder: porder: Simple CLI for Planet ordersV2 API (Version 0.8.3). *Zenodo*. 10.5281/zenodo.5079783

McGuinness, K., **Hinks, I.**, Westcott, K., and Gheewala, S. (2020). An integrated assessment of particulate respirators used as personal protection from ambient air pollution in Bangkok, Thailand. *Journal of Global Health Reports*. 10.29392/001c.14598.

Pimple, U., Simonetti, D., **Hinks, I.**, Oszwald, J., Berger, U., Pungkul, S. Leadprathom, K., Pravinvongvuthi, T., Maprasoap, P., and Gond, V. (2020). A history of the rehabilitation of mangroves and an assessment of their diversity and structure using Landsat annual composites (1987–2019) and transect plot inventories. *Forest Ecology and Management*. 10.1016/j.foreco.2020.118007.

CONFERENCE PRESENTATIONS

Hinks, I. and Gray, J.M. (2022). Monitoring Smallholder Agriculture at Scale with Convolutional Networks and Data Augmentation. *Fall Meeting of the American Geophysical Union, Dec 12-16, New Orleans, LA*. (presentation)

Gray, J.M., **Hinks, I.**, Jain, M., Singh, B., Agrawal, A., and Ishtiaque, A. (2022). Sowtime: Climate Adaptive Agriculture in the Eastern Gangetic Plains. *NASA LCLUC Science Team Meeting, Oct 18-20, Bethesda, MD*. (poster)

Hinks, I. and Gray, J.M. (2021). Monitoring Crop Development in Smallholder Farms Using Remotely Sensed Time Series Data Augmentation. *Fall Meeting of the American Geophysical Union, Dec 13-17, New Orleans, LA*. (presentation)

PROFESSIONAL EXPERIENCE

Graduate Research Assistant
Aug 2020 – Present

Center for Geospatial Analytics – NC State University — *Raleigh, NC*

- Use parallel and high performance computing to develop and run algorithms on massive data through NC State University's cluster computing facility
- Developed Bayesian hierarchical model to efficiently extract field-level phenological metrics and uncertainties from time series of multi-source satellite data
- Develop spatio-temporal convolutional networks to automatically detect smallholder fields from satellite images
- Apply dynamic linear models to fuse satellite imagery for agricultural assessment

Technical Consultant
May 2020 – Aug 2020

Curamericas Global — *Raleigh, NC*

- Developed software to help scale the scope of the non-profit's outreach to over 1.4 million mothers and children worldwide
- Automated the volunteer onboarding process and developed visualization dashboards with live updates of volunteers' data collection to present to Curamericas Global's partners
- Organization is now partnering with Microsoft for Project Resolve, to "build health equity and social justice via community-driven innovation"

Founding Software Developer, User Experience Researcher
Aug 2017 – Oct 2019

Acta Solutions, LLC — *Chapel Hill, NC*

- Founding developer of a five-person startup that develops software to increase the transparency and collaboration between local governments and their residents

- Implemented machine learning to comprehend free-form feedback from residents, and automatically generate actionable reports with data visualizations to local governmental officials
- Received multiple startup grants and participated in 3 accelerator programs; the startup currently serves over 20 paying local governmental clients

Environmental Sustainability Technical Intern **May 2018 – Aug 2018**
SAS Institute, Inc. *Cary, NC*

- Created SAS programs to parse HTML to collect vehicle information for LEED Certification points, and determine need for additional EV charging stations
- Analyzed SAS' hourly water and energy usage data from 2013-2018, acquired from over 40 sensors throughout the headquarters, with SAS programming and Visual Analytics

PROJECTS & PACKAGES

The blsp R package with a Bayesian land surface phenology model **2022**
Contributor to GitHub repository

- Translated code from R to C to increase computational efficiency

porder CLI for Planet ordersV2 API **2021**
Contributor to GitHub repository

- Used Python to add equations to compute predefined indices in open-source CLI
- Increased accessibility of API documentation with vocabulary definitions and code examples

FPGA Design & Implementation **2018**
Digital Logic Design Course (COMP 541) – UNC Chapel Hill

- Fully implemented the MIPS I instruction set using Verilog (RTL) on a Nexys 4 FPGA
- Developed recursive Tower of Hanoi game using MIPS Assembly Language on a Nexys 4 FPGA

FUNDING

NC State Center for Geospatial Analytics ($800). Geospatial Analytics Travel Award. Fall 2021.

University of North Carolina at Chapel Hill ($36,000). Full-tuition Carolina Scholarship (Merit-based). Fall 2016 – Spring 2020.

Carolina Center for Public Service ($2,500). Robert E. Bryan Fellowship. Fall 2018 – Spring 2019.

PROFESSIONAL SERVICE

Co-President **May 2022 – April 2023**
Geospatial Graduate Student Organization

Co-President **May 2022 – April 2023**
College of Natural Resources Graduate Student DEI Coalition

Development Committee Member **May 2022 – April 2023**
NC State Center for Geospatial Analytics

Mentor **Feb 2021-2023**
Pearl Hacks

Graduate Career Mentor **Sept 2021 – Present**
NC State College of Natural Resources

Member **Nov 2020 – Present**
American Geophysical Union

Mentor **May 2020 – Present**
Rewriting the Code