

Madeleine Grunde-McLaughlin

mgrund@sas.upenn.edu

EDUCATION

UNIVERSITY OF PENNSYLVANIA

*Candidate for BA in Cognitive Science
Minors: Computer Science, French
GPA: 3.94/4.00*

Philadelphia, PA

August 2016 - Present

PRINCETON UNIVERSITY

Audited Computer Vision, NLP, Advanced Graph Theory (not for credit)

Princeton, NJ

September - December 2019

LYON LUMIÈRE II

French courses including Neuroscience, Human Computer Interaction, and Memory

Lyon, France

January - May 2019

COUNCIL ROCK NORTH HIGH SCHOOL

Newtown, PA

June 2016

RESEARCH

ACTION GENOME QUESTION ANSWERING

Domain: Computer Vision

Mentors: Professor Maneesh Agrawala, Ranjay Krishna

Submission: IEEE CVPR 2021

Stanford University

May 2020 - Present

- Built a pipeline to generate over 342 million complex question answer pairs about videos
- Developed an algorithm to balance answer distributions, leaving a final dataset of 5.5 million question-answer pairs
- Established a suite of metrics to measure different compositional reasoning skills
- Applied successfully for AWS credits through the Stanford Institute for Human-Centered Artificial Intelligence

HIERARCHICAL REASONING IN WORKING MEMORY

Domain: Cognitive Science

Mentors: Professor Alan Stocker, Dr. Cheng Qiu

University of Pennsylvania

January 2020 - Present

- Created an interactive task to measure attraction and repulsion biases in spatial working memory
- Wrote a literature review about previous tactics used to predict the structure of working memory

BAYESIAN INTERVENTIONS

Domain: Human Computer Interaction

Mentors: Professor Jessica Hullman, Professor Yea-Seul Kim

Publication: IEEE InfoVis 2020

Northwestern University

June - December 2019

- Formulated a design space for visualizations using belief elicitation and Bayesian modeling
- Constructed Bayesian statistical models of the cognitive effects of source trust
- Designed and implemented interactive Bayesian visualizations through D3 and Idyll
- Analyzed literature on source trust elicitation and risk analogies to inform project design decisions

THEY DRAW IT!

Domain: Human Computer Interaction

Mentors: Professor Jessica Hullman, Francis Nguyen

Northwestern University

June - August 2019

- Implemented multiple style functionalities for tool helping journalists create interactive visuals
- Contributed to design decisions about improving interface useability
- Brainstormed questions to ask journalists about interactive visualizations and analyzed responses

WILLINGNESS TO WAIT

Domain: Behavioral Science

Mentor: Dr. Karolina Lempert

University of Pennsylvania

January - May 2018

- Collected participants' data on their willingness to wait for rewards under uncertainty
- Recorded their results into MATLAB for further analysis

VENEZUELAN HEALTH CARE STANDARDS

Domain: Healthcare Policy

University of Pennsylvania Law School

October - December 2017

- Investigated Venezuelan health care standards from public records, journalism, and international reports
- Organized research to inform Penn Law students providing aid to asylum seekers

PUBLICATIONS

AGQA: A Benchmark for Compositional Spatio-Temporal Reasoning

Madeleine Grunde-McLaughlin, Ranjay Krishna, Maneesh Agrawala

Submitted to: Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition, 2021

Bayesian-Assisted Inference from Visualized Data

Yea-Seul Kim, Paula Kayongo, **Madeleine Grunde-McLaughlin**, Jessica Hullman

IEEE Transactions on Visualization and Computer Graphics, 2020

PRESENTATIONS

Measuring Spatio-Temporal Reasoning Through VideoQA

Madeleine Grunde-McLaughlin, Ranjay Krishna, Maneesh Agrawala

Poster Presentation: *Grace Hopper Celebration of Women in Computing, 2020*

WORK EXPERIENCE

ARAVIND EYE CARE SYSTEMS

Madurai, India

Project Student

May - August 2018

- Implemented a Moodle Learning Management System to track training completion for doctors and nurses
- Lead a focus group with 8 doctors to test the Learning Management System interface
- Re-structured the doctor's training curriculum into modules that specifically target doctors' needs
- Liaised between 5 departments on designing the goals and implementation of this project

DYNAMIX GYMNASTICS

Levittown, Pennsylvania

Assistant Camp Director

June - August 2017

- Managed a team of 11 coaches of various experience levels
- Produced lesson plans for competitive and recreational gymnasts
- Communicated goals to and mediated interpersonal conflicts among coaches, parents, and children

SERVICE AND LEADERSHIP

PENN FOR REFUGEE EMPOWERMENT

University of Pennsylvania

Leadership Positions: Vice President, Director of Tutoring

February 2017 - Present

- Co-founded tutoring program that now connects 50+ volunteers to tutor refugees in Philadelphia and abroad
- Re-structured the organization's focus to increase tutoring numbers by over 300% in one semester
- Participated in the UN TOGETHER Campaign to promote university student led refugee aid organizations
- Tutor high school students at the African Family and Health Organization (AFAHO) in West Philadelphia
- Establishing a college mentorship program for AFAHO students with workshops, educational materials, and mentoring

ALPHA PHI OMEGA SERVICE FRATERNITY

University of Pennsylvania

Leadership Positions: Pledge Service Chair, Leadership Committee

January 2018 - Present

- Volunteer at various service events in Philadelphia, especially UCHC soup kitchens and Books Through Bars
- Lead a committee to organize a service event cleaning the streets of North Philadelphia