

# Cat Mai

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## Education

**Clark University, Worcester, MA.** 2018–2022

B.A. Computer Science | Computational Science concentration  
B.A. (Hons) Mathematics | Advisor: Michael Satz

**Green River College, Auburn, WA.** 2016–2018

High school diploma–Associate of Arts program, *High honors*, Philosophy

## Relevant Coursework

Game Theory, Quantitative Finance, Stochastic Models, Numerical Analysis, **Applied**  
Cyber Law & Policy, Linear Models/Econometrics (S22).

Theory of Computation, Automata Theory, Quantum Computing, Real Analysis. **Theory**

## Research Experience

\*HCI=Human-Computer Interaction.

**Senior Thesis, Clark University,** Jun '21–Present

Mentor: Michael Satz.

Topic: Monte Carlo Markov chain (MCMC) for Bayesian models. We look at different MCMCs to see how well they converge to the target distribution. We decide to work on Hamiltonian Markov Chain, combining MCMC mechanism and deterministic gradient calculation to achieve faster convergence in complex models. [\[repo\]](#)

**Visiting Research Assistant, Brown HCI @ Brown University,** Summer '21

Mentors: Jeff Huang, Talie Massachi.

- Worked on [Automotion](#). Analyzed user study's data to detect patterns in annotators' prediction. Modified, retrained CNN, Random Forest, SVM to predict affect.
- Rewrote a submission to IMWUT. Our paper reveals insights about using annotators vs. ML models to predict affect from pressure readings and motion capture.

**HCI Research Assistant, Clark University,** Feb '20–Jun '21

Mentor: Shuo Niu.

- Crawled over 10,000 videos that was used across multiple projects. Set up annotation interface. Co-author and maintainer of the lab's [crawler package](#)
- Analyzed videos for common themes and tested for correlated categories using video statistics
- Our papers identifies patterns in parasocial relationships and civic engagement on YouTube.

**HCI Research Assistant, Clark University,** Summer '19

Mentors: John Magee, John Garton.

- Researched gamification approach for a historic garden as part of a conservation project. Rendered 3D photogrammetry models using site's photos. [\[demo\]](#)
- My early models were a part of Dr. Garton and his colleague's [grant](#) materials.

**Research Assistant, NGSX Learning Lab @ Clark University,** Sep '18–Jun '21

Mentor: Sarah Michaels.

- Investigated effectiveness of visualization tools for classroom talk.
- Did ethnographic research at Worcester high school. Our project tried to find what makes science lectures productive and to improve professional development for science teachers.

## Work Experience

### Teaching Assistant, Clark University.

Aug '19–Present

Lead weekly labs and 1-to-1 tutoring. Prepare solutions and grade homework.

CS 180 Automata Theory	Fa 2020
CS 121 Data Structures-Java	Sp 2021, Fa 2021
CS 120 Intro to Comp Sci-Python	Fa 2019
MATH 114 Discrete Mathematics	Sp 2020, Fa 2021
MATH 124, 125 Honors Calculus I, II	Fa 2020, Sp 2021, Fa 2021

### Game Tester, Carnegie Mellon HCII.

Feb '21–Apr '21

Tested Decimal Point – a high school math game for Dr. Bruce McLaren's lab.

### Technician Intern, Hamilton Computer Repairs.

Nov '19–Aug '20

Performed diagnostics and hardware replacement for laptops and PC.

## Reports & Publications

\* = equal contribution

### Conference Papers.....

- CSCW '21 Shuo Niu, **Cat Mai**, Katherine G. McKim, and Scott McCrickard. “#TeamTrees: Investigating How YouTubers Participate in a Social Media Campaign”. *ACM Conference on Computer-supported Cooperative Work 2021*. [\[pdf\]](#).
- CHI '21 Shuo Niu, Ava Bartolome\*, **Cat Mai\***, and Nguyen Binh Ha\*. “#StayHome #WithMe: How Do YouTubers Help with COVID-19 Loneliness?” *ACM CHI Conference on Human Factors in Computing Systems 2021*. (Acceptance rate = 26.3%) [\[pdf\]](#).

### Posters & Extended Abstracts.....

- Fall Fest '21 Dinithi Silva-Sassaman, **Cat Mai**, Jing Qian, and Jeff Huang. *Predicting Emotion and Attention from Smartphone Behavioral Data*. [\[pdf\]](#). Fall Fest '21 Clark University.
- CSCW '21 Katherine McKim, **Cat Mai**, Danielle Hess, and Shuo Niu. *Investigating Drug Addiction Discourse on YouTube*. [\[pdf\]](#). CSCW '21.
- Winter Fest '21 **Cat Mai**. *How YouTubers Participate in a Social Media Campaign: A Culture-Based Analysis of #TeamTrees*. [\[pdf\]](#). Winter Fest '21 Clark University.
- Fall Fest '19 **Cat Mai\***, Tina Chiem\*, and Anisha Hassan\*. *Odd One Out”: Model Based Biology in an ESL Classroom*. [\[pdf\]](#). Fall Fest '19 Clark University.

### Class Reports .....

- “Numerical Analysis research project: Tension Spline Interpolation” (Fall 2021). [\[pdf\]](#).
- “Emotional Analysis Via Content Creation on YouTube During COVID-19” (Fall 2020). [\[pdf\]](#).

## Awards, Honors

2020: LEEP Research Fellow

Clark University

2018-2022: Traina Scholarship (top-level awarded)

Clark University

## Volunteer

### Diversity & Inclusion Committee, American Go Association.

2020–Present

- Co-directed e-US Open Tournament 2020 with around 1000 players.
- Analyze education initiatives, market research for Go/weiqi national outreach.

### Math Tutor, Massachusetts Correctional Institution.

2018–2020

- Tutored weekly as part of prison education [Petey Greene program](#).

## Tech Stack

**Proficient:** Java, Python, JavaScript,  $\LaTeX$  | **Familiar:** C/C++, Kotlin, Bash, R