

# Enci Liu

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## EDUCATION

**Stanford University**, Stanford, CA

Major: Computer Science

09/2018 – Expected 06/2022

GPA: 3.95/4.30

Relevant Coursework: CNNs for Visual Recognition, Natural Language Processing with Deep Learning, Machine Learning, Coursera GAN Specialization, Machine Learning with Graphs, Probabilistic Graphical Models

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## RESEARCH EXPERIENCE

**Object Count from Remote-Sensing Imagery Project**, Sustain Lab, Stanford, CA

03/2021 – present

- Designed a cost- and time-efficient pipeline, called *IS-Count*, for large-scale object counting using remote-sensing imagery and achieved 99% accuracy on estimating object counts in 43 African countries, 51 US states, and Bangladesh while using as few as 0.01% of the satellite images
- Adopted importance sampling for estimating object count distribution and constructed proposal distributions from socioeconomic indicators, including nighttime light intensity and population density

**Metadata-Shaping Project**, Hazy Research, Stanford, CA

02/2021 – present

- Designed methods for *metadata shaping*, a data-centric approach that introduces inductive biases by modifying the input data for improving the tail performance of pre-trained language models (BERT base) on entity-heavy tasks
  - Experimented with different combinations of metadata-shaping techniques on text classification, entity typing, and relation extraction benchmarks, leading to an overall improvement of 5.3 F1 score and a tail-example improvement of 10 times compared to the BERT baseline without metadata shaping
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## PUBLICATIONS

Chenlin Meng\*, **Enci Liu\***, Willie Neiswanger, Jiaming Song, Marshall Burke, David B. Lobell, Stefano Ermon.

*IS-Count: Large-scale Object Counting from Satellite Images with Covariate-based Importance Sampling*, to appear in Proc. 36th AAAI Conference on Artificial Intelligence (AAAI 2022). (\* indicates equal contribution)

Simran Arora, Sen Wu, **Enci Liu**, and Christopher Ré. *Metadata Shaping: Natural Language Annotations for the Tail*, arXiv: <https://arxiv.org/pdf/2110.08430.pdf>. Under review of ACL 2022.

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## TEACHING & WORKING EXPERIENCE

**Section Leader for the CS198 Program**, Stanford, CA

09/2020 – present

- Lead and teach sections of 10 to 13 people for Python and C++ courses (CS106A and CS106B)
- Grade sectionee's assignments and attend helping sections for all students enrolled in both courses

**Microsoft Explore Intern**, San Francisco, CA

06/2020 – 09/2020

- Created a feature that provides alt-text for images in Outlook iOS with VoiceOver, which increases the accessibility of Outlook mobile and empowers users with vision impairments
- Conducted research and interviews on rich-text signature in Outlook mobile and proposed three new designs

**Spreadsheet developer for Mechanical Engineering Department**, Stanford, CA

05/2020 – 10/2020

- Added 4-year planning table to the existing program sheet for Mechanical Engineering Department using logic programming language Epilog and HTML
  - Updated the program sheet to incorporate course prerequisites to provide a more thorough user experience
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## PROFICIENCY

Python, C++, Swift, PyTorch, HTML