# Joel Ye

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joel99.github.io

## Research Interests

Embodied AI, NeuroAI, AR/VR, Brain-Computer Interfaces, Machine Perception

## Education

**Georgia Institute Of Technology**
B.S. Computer Science | Minor in Mathematics | *GPA: 4.0 / 4.0* May 2020
M.S. Computer Science | Machine Learning Specialization | *GPA: 4.0 / 4.0* May 2021
- Coursework: Comp. Neuro, Network Science, Computation and the Brain, Learning from Demonstrations

## Publications and Presentations

**J. Ye**, D. Batra, E. Wijmans, and A. Das. Auxiliary Tasks Speed Up Learning PointGoal Navigation.
In *Conference on Robot Learning (CoRL)*, 2020.
**J. Ye**, D. Batra, A. Das, and E. Wijmans. Auxiliary Tasks and Exploration Enable ObjectNav.
*In submission to ICCV 2021*.
**J. Ye**, C. Pandarinath. Representation learning for neural population activity with Neural Data Transformers.
In submission. Poster presentation at Neuromatch 3.0, 2020.

## Awards

Donald V. Jackson Fellowship. Awarded to 1st-year MS students in the Georgia Tech College of Computing.

## Projects

**Submissions to CVPR Embodied AI Challenges** 2021
- Preparing agents for the AI2-Thor and Habitat ObjectNav challenges (*with O. Maksymets, in progress*).

**Neural Latents Benchmark** | neurallatents.github.io/ 2021
- Organizing benchmark for unsupervised models of neural activity (*with C. Pandarinath, in progress*).

**Perturbome of Graphs of RNNs** | Report: github.com/joel99/noised-rnn-networks 2020
- How do deep neural networks compute in the presence of internal noise, or targeted perturbation?
- Evaluated this dynamical robustness by noising recurrent networks built with pytorch-geometric

**BERT Representations During Fine-Tuning** | Report: github.com/joel99/bert-representations 2020
- Studied how transformers change during fine-tuning and forgetting using representational analysis

**Automatically Defined Functions** 2019
- Designed and built system to detect and extract useful functions in evolved computation trees

**Photobooth** | github.com/HackGT/photo-style 2018
- Interfaced with style-transfer server to collect styled photos, built masking app with HTML canvas
- Set up server polling endpoint to interface with DSLR camera trigger, provide fallback laptop camera

## Experience

**Microsoft**, *Visual Document Intelligence, Software Engineering Intern - Remote* Summer 2020
- Prototyped empty region annotation and data augmentation for document recognition frontend
- Integrated, benchmarked and analyzed data augmentation performance in C# backend

**Ubiquity6**, *Software Engineering Intern - San Francisco, CA* Summer 2019
- Prototyped wayfinding experience for navigating AR scenes, using a custom navigation mesh
- Wrote React Native UI for collecting user feedback, improving components for draggable content
- Wrote SfM post-processing to prototype feature extraction training pipeline
- Analyzed ARKit (Obj-C) and ARCore (Java) anchor drift, assessing viability for better pose priors
- Extended render engine testing suite through Puppeteer, wrapping Three.JS API