

Yi Chern Tan

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Education

Yale University

Bachelor of Science (CGPA: 3.98), Summa Cum Laude

Double Major in Computer Science (GPA: 4.00) and Ethics, Politics, Economics (GPA: 3.97)

- **Selected Coursework:** NLP, Machine Learning, Data Science Ethics, Normative Ethics, Distributive Justice, Classical AI, Robotics, Operating Systems, Cybersecurity, Data Structures, Algorithms, Discrete Math, Linear Algebra, Probability and Statistics, Game Theory
- **Honors:** Phi Beta Kappa (top 5% of cohort), Benjamin Franklin College Valedictorian

New Haven, CT

Aug '16 – May '20

Research and Representative Peer-Reviewed Publications

- **NeurIPS '19 (1st author, spotlight)** Assessing Social and Intersectional Biases in Contextualized Word Representations
- **ACL '19 (co 1st author, BlackBoxNLP workshop)** Open Sesame: Getting Inside BERT's Linguistic Knowledge
- **ACL '19 (4th author)** SPaC: Cross-Domain Semantic Parsing in Context
- **ACL '20 (3rd author)** ESPRIT: Explaining Solutions to Physical Reasoning Tasks
- **ICLR '21 (4th author)** GraPPa: Grammar-Augmented Pre-Training for Table Semantic Parsing
- **Affiliations and Collaborators:** Elisa Celis (Controlling Bias in AI Group), Robert Frank (Computational Linguistics at Yale Lab), Tao Yu, Rui Zhang, Dragomir Radev (Language Information and Learning at Yale Lab), Nazneen Rajani and Xi Victoria Lin (then Salesforce Research), John Lafferty
- **Academic Reviewing:** EMNLP '21, NeurIPS '21 (Outstanding Reviewer Award), ICLR '22, ICML '22, NeurIPS '22, EMNLP '22

Experience

Waymo LLC

Machine Learning Engineer, Simulation and Safety Evaluation

- Improved automated data refresh, training and evaluation infrastructure for a classifier that scores the self-driving car's likelihood of a realistic collision with other road users in simulation, decreasing experiment iteration time from ~5 days to ~2 days
- Implemented feature engineering and architectural changes (e.g. mixture of experts) to the collision likelihood model, improving P@R95 by ~4% overall and ~22% for vulnerable road users, reducing human-in-the-loop triage load by ~10%.
- Proposed and launched a new model to classify different types of safety-relevant incidents (e.g. tailgating, lane changes), improving overall accuracy by ~20%.

Mountain View, CA

Mar '22 – present

Facebook, Inc.

Software Engineering Intern, Instagram

- Developed high-performant text classifiers for detecting violating comments (toxicity, bullying) with a new contextual encoder, distributed learning, and knowledge distillation; increased calibrated recall by ~70% at ~40% lower latency across 9 languages
- Implemented MLOps tooling for model training at scale (automated training pipelines, ~billions of comments), evaluation (score visualization) and deployment (publishing workflows) of classifiers; increased model iteration speed and robustness
- Secured the highest tier full-time return offer (top ~5%, "greatly exceeds expectations" performance review)

Menlo Park, CA

May '19 – Aug '19

TAIGER

Applied Research Scientist Intern, NLP

- Built pipeline for identity card image segmentation and extraction, increasing AP by >70% (TensorFlow, OpenCV)
- Prototyped a paraphrase generation technique for augmenting an English creole dataset of municipal queries using unsupervised machine translation, increasing BLEU by >2 (PyTorch)

Singapore

Dec '18 – Jan '19

Smart Nation and Digital Government Office, Prime Minister's Office

Policy Research Intern, Planning and Prioritization Directorate

- Authored strategy papers on the development of AI and regulation for ethical AI, presented to Permanent Secretary of Ministry
- Analyzed paradigms of accountability-based data protection, with WEF Centre for the Fourth Industrial Revolution

Singapore

May '18 – Aug '18

Activities and Projects

- **UNIX Shell in mCertiKOS:** Implemented a limited UNIX-like shell in the mCertiKOS operating system (C, QEMU)
- **Capsule Networks for Abstractive Summarization:** Augmented sequence encodings with capsule network architecture for abstractive summarization in an attention-based sequence-to-sequence model (PyTorch)
- **Tool Use by Baxter Robot:** Built a learning pipeline for a robot to learn time extended series of actions to accomplish a task with a tool using inverse kinematics solver and simulation-to-real transfer (ROS, MuJoCo, OpenAI Gym)
- **Road Sign Updates:** Reduced end-to-end road sign update delay for New Haven transport officials from 30min to 10s by developing a web app to send traffic information to electronic road signs (JavaScript, Heroku, PostgreSQL, Pug, Express)