

EDUCATION

- **School of Computer Science, Carnegie Mellon University, Pittsburgh, PA, USA**
Doctor of Philosophy (Language and Information Technologies) *Fall 18 - 23*
Research Interests : Survival and Time-to-Event Analysis, Graphical Models, Mixed-Integer Non-Linear Programming
Thesis Advisor : Prof. **Artur Dubrawski**, Auton Lab, Robotics Institute.
Committee : Prof. **Bhiksha Raj**, Prof. **Louis-Philippe Morency**,
Prof. **Russell Greiner** (University of Alberta) and Prof. **Katherine Heller** (Google and Duke University)
Master of Science (Language Technologies) *Fall 16 - 18*
Coursework : Machine Learning, Intermediate Statistics, Probabilistic Graphical Models, Structured Prediction.
- **Army Institute of Technology, University of Pune, India** *Fall 12 - 16*
Bachelor of Computer Engineering, First Position in Class, Chief of Army Staff Gold Medal in Academics

EXPERIENCE

- **Research Scientist, Google Research, San Francisco** *Spring 23 -*
Methodology and Research : Robust Learning of Large Language Models (with Google **DeepMind** and **Brain**)
Product Engagements : Conversion Delay Modelling for Google Android App Ads, Estimation of learnt ranking functions for user engagement for **YouTube** Music.
Google App Ads Conversion Delay Modelling for Google Ads.
- **Research Intern, Responsible AI, Google Research** (Remote due to COVID-19) *Spring 22*
Algorithmic Fairness in Integer Risk Scoring Systems.
- **Research Intern, Brain Team, Google Research** (Remote due to COVID-19) *Summer 20*
Deep Semi-Parametric Mixtures for calibrated estimation of Time-to-Event.
- **Summer Associate, JP Morgan AI Research, New York City** *Summer 19*
Manager : Prof. **Manuela Veloso**, Dr. **Prashant Reddy**
Bayesian methods to mitigate systemic analyst bias and error in equities forecasts.
- **Science for Social Good Fellow, IBM TJ Watson Research Center, New York** *Summer 18*
Manager : Dr. **Kush R. Varshney**
Causal neural networks to recover heterogeneous treatment effects.

TEACHING

- CMU 10-708, Probabilistic Graphical Models** *Fall 20*
Teaching Assistant for Prof. **Pradeep Ravikumar**. [\[webpage\]](#)
- CMU 11-761, Language and Statistics** *Fall 19*
Teaching Assistant for Prof. **Bhiksha Raj**. [\[webpage\]](#)

PUBLICATIONS

In Submission/Under Preparation

1. "Recovering Sparse and Interpretable Subgroups with Heterogeneous Treatment Effects with Censored Time-to-Event Outcomes" [\[link\]](#)
Chirag Nagpal, Vedant Sanil, and Artur Dubrawski.
CLEAR (In submission) - *Causal Learning and Reasoning Conference '23* and,
ML4H - *Machine Learning for Health Symposium '22. (Extended Abstract)*
 2. "Participatory Systems for Personalized Prediction" [\[link\]](#)
Hailey James, **Chirag Nagpal**, Katherine Heller, and Berk Ustun.
(Preliminary work presented at NeurIPS '22 Workshop - Participatory Approach to AI for Mental Health)
 3. "Personalized Risk Scoring Systems with Fair Use Guarantees"
Chirag Nagpal, Natalie Harris, Katherine Heller, and Berk Ustun.
- Accepted Peer Reviewed Journal, Conference and Symposium Papers**
4. "Counterfactual Phenotyping with Censored Time-to-Events" [\[arXiv\]](#) [\[code\]](#)
Chirag Nagpal, Mononito Goswami, Keith Dufendach, and Artur Dubrawski
KDD - *ACM Conference on Knowledge Discovery and Data Mining '22*
 5. "auton-survival : an open-source package for Regression, Counterfactual Estimation, Evaluation and Phenotyping with Censored Time-to-Event Data" [\[arXiv\]](#) [\[code\]](#) [\[Official CMU ML Blog\]](#)
Chirag Nagpal, Willa Potosnak, and Artur Dubrawski
MLHC - *Machine Learning for Healthcare Conference '22*

6. "Deep Cox Mixtures for Survival Regression" [\[arXiv\]](#) [\[code\]](#)
Chirag Nagpal, Steve Yadlowsky, Negar Rostamzadeh, and Katherine Heller
MLHC - Machine Learning for Healthcare Conference '21
Taught in Prof. David Sontag's Machine Learning for Health course at MIT and Harvard. [\[link\]](#)
7. "Deep Survival Machines : Fully Parametric Survival Regression and Representation Learning for Censored Data with Competing Risks" [\[arXiv\]](#) [\[code\]](#)
Chirag Nagpal, Xinyu (Rachel) Li, and Artur Dubrawski
JBHI - IEEE Journal of Biomedical and Health Informatics '21
Spotlight Presentation at NeurIPS ML for Health Workshop '19, (Top 3% out of over 300 submissions.)
8. "Deep Parametric Time-to-Event Regression with Time-Varying Covariates" [\[arXiv\]](#) [\[code\]](#)
Chirag Nagpal*, Vincent Jeanselme*, and Artur Dubrawski
AAAI Spring Symposium - Survival Prediction : Algorithms, Challenges and Application '21
9. "Interpretable subgroup discovery in treatment effect estimation with application to opioid prescribing guidelines"
Chirag Nagpal, Dennis Wei, Bhanukiran Vinzamuri, Monica Shekhar, Sara E. Berger, Subhro Das, Kush R. Varshney
CHIL - Conference on Health, Inference and Learning '20 [\[arXiv\]](#) [\[code\]](#)
10. "Dynamically Personalized Detection of Hemorrhage"
Chirag Nagpal, Xinyu (Rachel) Li, Michael R. Pinsky and, Artur Dubrawski
MLHC - Machine Learning for Healthcare Conference '19 [\[arXiv\]](#)
Abstracts and Posters at Medical Conferences
11. **ICCAI '22**, "Identification of patients with stable coronary artery disease who benefit from ACE inhibitors using Cox mixture model for heterogeneous treatment effects"
 Van H Le, **Chirag Nagpal**, and Artur Dubrawski
12. **STS Coronary '22**, "Novel Machine Learning Technique Defines Patients Who Benefit from Off-Pump CABG"
 Keith Dufendach, **Chirag Nagpal**, Willa Potosnak, Artur Dubrawski, and David Kaczorowski
13. **ISICEM '22**, "Phenogrouping of hemorrhagic trauma patients using latent variable machine learning."
Chirag Nagpal and Artur Dubrawski
14. **CCM '18**, "Accuracy of identifying venous thromboembolism by administrative coding compared to manual review."
 Tiffany Pellathy, Melissa Saul, Gilles Clermont, **Chirag Nagpal**, Artur Dubrawski, Michael Pinsky, and Marilyn Hravnak.

SOFTWARE **auton-survival** : an Open-Source Package for Regression, Counterfactual Estimation, Evaluation and Phenotyping with Censored Time-to-Event Data.
[\[Github Repository\]](#) [\[Docs\]](#) [\[Official CMU Blog\]](#)

MENTORING **Masters**
 - Fall '22 : **Shakirah Cooper**, Biomedical Engineering, Carnegie Mellon
 - Fall '19 : **Xinyu (Rachel) Li**, Information Systems, Heinz College → Robotics PhD, Carnegie Mellon
Undergraduates
 - Summer '22 : **Mingzhu Liu**, Computer Science, University of Michigan at Ann Arbor
 - Summer '22 : **Van H. Le**, Math and Economics, Hollins University, Virginia
 - Fall '21 : **Willa Potosnak**, Biomedical Engineering, Duquesne University, PA → Robotics PhD, Carnegie Mellon

EXTERNAL SERVICE **Organization**
 Chair for the PhD Student Consortium, **AAAI Spring Symposium on Survival Prediction 2021**
Reviewer
Journals : IEEE Journal of Biomedical and Health Informatics, Journal of Forecasting, Frontiers in Immunology
Conferences : NeurIPS, ICML, ICLR, MLHC, CHIL, ML4H

DEPARTMENTAL SERVICE Member, **School of Computer Sciences Dean's PhD Students Advisory Committee** [\[webpage\]](#)
 Member, Admissions Committee, **Robotics Institute Summer Scholar's Program.** [\[webpage\]](#)
 Chair, **SCS DEC/5, CMU Computer Science Graduate Students Social Organization.** [\[webpage\]](#)
 Member, **International Student's Association**, Carnegie Mellon. [\[webpage\]](#)

PERSONAL **Citizenship** : Indian, **Languages** : English and Hindi
Interests : Equitation, Trivia Quizzing, Squash, Making and DIY, Amateur Radio Operator (Callsign : VU2CND)

REFERENCES Prof. **Artur Dubrawski**, Chair Professor of Computer Science, Carnegie Mellon
 Prof. **Bhiksha Raj**, Professor of Computer Science, Carnegie Mellon
 Dr. **Katherine Heller**, Research Scientist, Google Research.