

Mononito Goswami

CONTACT INFORMATION	 5719 Elwood Street, Pittsburgh, PA 15232  +1 (412)-626-1478 LinkedIn ResearchGate Google Scholar  mgoswami [at] andrew.cmu.edu
EDUCATION	<p>Carnegie Mellon University (CMU) Pittsburgh PA, USA <i>Doctor of Philosophy in Robotics</i> September 2020 – 2025 (expected) CGPA: 4.0/4.0 Relevant Coursework: Adv. Introduction to Machine Learning (10-715), Math Fundamentals for Robotics (16-811), Probabilistic Graphical Models (10-708), Computer Vision (16-720)</p> <p>Delhi Technological University (DTU) New Delhi, India <i>Bachelor of Technology in Computer Engineering</i> August 2016 – June 2020 CGPA: 9.11/10 Thesis: Towards Social & Engaging Peer Learning. Advisor: Prof. Rajni Jindal. Relevant Coursework: Evolutionary & Swarm Computing, Machine Learning, Artificial Intelligence, Natural Language Processing, Data Structures, Algorithm Design & Analysis, Theory of Computation, Data Warehousing & Mining</p> <p>Father Agnel School New Delhi, India <i>All India Senior School Certificate Examination (AISSCE)</i> April 2014 – April 2016 Percentage: 95.2% School topper in AISSCE 2016 School Head Boy, leadership role in school parliament, teacher-student interface and learning management.</p>
WORK EXPERIENCE	<p>Auton Lab, Carnegie Mellon University Pittsburgh, USA <i>Graduate Research Assistant</i> August 2020 - Present Machine Learning research on interactive weak supervision for healthcare applications, advised by Prof. Artur Dubrawski.</p> <p>Auton Lab, Carnegie Mellon University Pittsburgh, USA <i>Robotics Institute Summer Scholar</i> June 2019 - August 2020 Machine Learning research on detecting cognitive disequilibrium and flow in children solving math problems, advised by Prof. Lujie (Karen) Chen and Prof. Artur Dubrawski.</p> <p>RoboTutor Project, Carnegie Mellon University Pittsburgh, USA <i>Robotics Institute Summer Scholar</i> June 2018 - September 2020 Developed Statistical Probe of Tutoring (SPOT), a tool for iterative data-driven improvement of RoboTutor, an Intelligent Tutoring System (ITS), advised by Prof. Jack Mostow.</p> <p>Phillip Capital Mumbai, India <i>Equity Research Intern</i> December 2017 Carried out a study on disruptive technology like Blockchain & edge-computing that can potentially transform the <i>FinTech</i> sector. [Report]</p> <p>Goods & Services Tax Network (GSTN) New Delhi, India <i>Summer Intern</i> June - July 2017 Designed the Analytics & Risk Management framework along with consultants from PwC, Infosys and State Tax departments. Co-developed a simplified tool for tax submissions for the pan-India GST roll out. [Report][Letter of Commendation]</p> <p>Centre for Development in Advanced Computing (CDAC) Noida, India <i>Winter Intern</i> December 2016 Developed a Grade-1 Unified English Braille (UEB) Conversion utility in C++. This work would help in implementation of UEB in India. [Report]</p>
RESEARCH EXPERIENCE	<p>Delhi Technological University, New Delhi, India Analyzing dyadic interactions between young children to identify non-verbal cues that aid effective story-telling. Advisor: Prof. Rajni Jindal. Current</p> <p>Developed a Multi-task Learning approach for Open Domain Suggestion Mining and a novel language model-based text over-sampling method. Advisor: Ms. Minni Jain. 2019</p> <p>Improvised energy-efficient clustering & routing algorithms for Wireless Sensor Networks using modified Binary Particle Swarm Optimization. Advisors: Prof. Indu S and Prof. Daya Gupta. 2017-2019</p> <p>Designed an Intrusion detection algorithm for critical RBAC administered databases using Pattern Mining</p>

and nearest-neighbours Anomaly Detection. Advisor: **Ms. Indu Singh**. 2017-2019

Investigating applications & modelling of fractional order-differential equations (FODEs) for control of infectious diseases using SVEIR models. Advisor: **Dr. Nilam**. [Report] 2017

Institute of Economic Growth, New Delhi, India

Examining recent economic policies about the broadcasting sector and Micro, Small and Medium Enterprises (MSMEs). Advisor: **Prof. Pravakar Sahoo**. Current

MIDAS, IIIT-Delhi, New Delhi, India

Distracted driver detection in real-time using a simple CNN-model. Advisors: **Dr. Rajiv Ratn Shah**, **Dr. Yifang Yin**, **Dr. Roger Zimmermann**. 2019

PUBLICATIONS

Goswami, Mononito, Benedikt Boecking, Patrick J. Coppler, Jonathan Elmer and Artur Dubrawski. "Towards Knowledge-driven Clinical Data Annotation Quality Assessment.". *In Submission*. (2021)

Goswami, Mononito, Benedikt Boecking, and Artur Dubrawski. "Weak Supervision for Affordable Modeling of ECG Data.". (2021) In *AMIA Annual Symposium Proceedings*. American Medical Informatics Association.

 **Goswami, Mononito***, Minkush Manuja*, and Maitree Leekha*. "Towards Social & Engaging Peer Learning: Predicting Backchanneling and Disengagement in Children". arXiv preprint arXiv:2007.11346 (2020).

 Singh, Indu, Minkush Manuja*, Rishabh Mathur* and **Mononito Goswami***. "Detecting Intrusive Transactions in Databases using Partially-ordered Sequential Rule Mining and Fractional-distance based Anomaly Detection". *International Journal of Intelligent Engineering Informatics* [PDF].

McReynolds, Andrew A., Sheba P. Naderzad, **Mononito Goswami**, and Jack Mostow. "Toward Learning at Scale in Developing Countries: Lessons from the Global Learning XPRIZE Field Study." In *Proceedings of the Seventh ACM Conference on Learning@ Scale*, pp. 175-183. 2020.

 Kaushik, Ajay*, **Mononito Goswami***, Minkush Manuja*, Indu S. and Daya Gupta. "A Binary PSO Approach for Improving the Performance of Wireless Sensor Networks." *Wireless Personal Communications* (2020): 1-35. [DOI].

Jindal, Rajni*, Maitree Leekha*, Minkush Manuja* and **Mononito Goswami***. "What makes a better companion? Towards Social & Engaging Peer Learning". To appear at 24th European Conference on Artificial Intelligence, ECAI 2020 [PDF].

Leekha, Maitree*, **Mononito Goswami*** and Minni Jain "A Multi-task Approach to Open Domain Suggestion Mining using Language Model for Text Over-sampling". In: Jose J. et al. (eds) *Advances in Information Retrieval. ECIR 2020. Lecture Notes in Computer Science*, vol 12036. Springer, Cham [DOI].

Goswami, Mononito*, Lujie Chen* and Artur Dubrawski. "Discriminating Cognitive Disequilibrium and Flow in Problem Solving: A Semi-supervised Approach Using Involuntary Dynamic Behavioral Signals". *Proceedings of the AAAI Conference on Artificial Intelligence*. Vol. 34. 2020. [PDF]

Goswami, Mononito*, Lujie Chen*, Chufan Gao and Artur Dubrawski. "Modeling Involuntary Dynamic Behaviors to Support Intelligent Tutoring (Student Abstract)". *Proceedings of the AAAI Conference on Artificial Intelligence*. Vol. 34. 2020. [PDF].


Jain, Minni*, Maitree Leekha*, **Mononito Goswami***. "A Multi-task Approach to Open Domain Suggestion Mining (Student Abstract)". *Proceedings of the AAAI Conference on Artificial Intelligence*. Vol. 34. 2020. [PDF]

Gao, Chufan, Fabian Falck, **Mononito Goswami**, Michael R. Pinsky, Anthony Wertz and Artur Dubrawski. "Detecting Patterns of Physiological Response to Hemodynamic Stress via Deep Unsupervised Learning". *Machine Learning for Health (ML4H) Workshop at NeurIPS 2019* [PDF].

Leekha, Maitree*, **Mononito Goswami***, Rajiv Ratn Shah, Yifang Yin and Roger Zimmermann. "Are You Paying Attention? Detecting Distracted Driving in Real-time". *Proceedings of the IEEE International Conference on Multimedia Big Data (BigMM)* [PDF].

Mian, Shiven*, **Mononito Goswami***, and Jack Mostow. "What's Most Broken? Design and Evaluation of a Tool to Guide Improvement of an Intelligent Tutor." *International Conference on Artificial Intelligence in Education*. Springer, Cham, 2019 [PDF].

Goswami, Mononito*, Shiven Mian*, and Jack Mostow. "What's Most Broken? A Tool to Assist Data-Driven Iterative Improvement of an Intelligent Tutoring System." *Proceedings of the AAAI Conference on Artificial Intelligence (Student Abstract)*. Vol. 33. 2019. *3-min presentation contest finalist* [PDF].

* indicates equal contribution,  indicates journal articles

ACHIEVEMENTS

Successfully led a team of scholars to facilitate the publication of the Robotics Institute Summer Scholars *Working Papers Journal* 2019.

Successfully completed the *Educational Data Mining track* of the Simon Initiative *LearnLab Summer School* organised by Carnegie Mellon University, in 2018 and 2019. Mined tutor logs from RoboTutor to

analyze *backing-out* from activities.

Awarded for the best essay on *Goods & Services Tax*, its financial and technological implications, in the 2017 Indian Institute of Public Administration Essay Competition, by the *Vice President of India*.

Stood **second** among 500 college teams and start-ups from all over India in a Hackathon organized by [National Payments Council of India](#) for designing an intrusion detection architecture using Fuzzy Logic & keystroke dynamics.

FELLOWSHIPS	Center for Machine Learning and Health (CMLH) 2021
SCHOLARSHIPS	Microsoft Research Travel Grant, AAAI-20 Student Scholarship, National Science Foundation Student Travel Grant to attend AIED 2019.
PROFESSIONAL SERVICE	<i>Reviewer</i> AAAI-2020, Journal of Educational Data Mining (JEDM), American Medical Informatics Association (AMIA) 2021 Annual Symposium, ICML 2021 ML4data workshop, NIPS-2021 <i>Admissions Committee</i> Robotics Institute Summer Scholar (RISS)-2020, RISS-2021 <i>Mentorship</i> RISS (CMU RI, Summer'21), Graduate Application Support Program (CMU SCS, Fall'20)
SOCIAL OUTREACH	Exposed our research on RoboTutor to primary stakeholders, some 8-10 year olds from Pittsburgh schools and obtained interesting feedback for comparative cognitive processes, as a part of the Gelfand Outreach program . July 2018 Took remedial classes in mathematics and science for some children in middle school in the Khora village, India. 2014
PROGRAMMING	Python, C++, MySQL, HTML, CSS, L ^A T _E X
HOBBIES	Photography, Cooking, Pranayama Yoga