# Subhajit Chaudhury


CONTACT INFORMATION

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EDUCATION

**The University of Tokyo**, Japan Apr 2018 - Mar 2021
Ph.D., Graduate School of Information Science and Technology
**Thesis:** *Understanding Generalization in Neural Networks for Robustness against Adversarial Vulnerabilities*

**Indian Institute of Technology (IIT), Bombay**, India Jul 2012 - Aug 2014
M.Tech, Department of Electrical Engineering
GPA: **9.81 out of 10**
**Thesis:** *Efficient Deformable 3D Graphics Rendering for real-time Haptics Applications*

**Jadavpur University**, India Jul 2008 - Jun 2012
B.E.(Hons.) Department of Electrical Engineering
GPA: **8.90 out of 10** (**Rank: 3rd/125**)
**Topic:** *Vision-based Indoor Structure Discovery for Locomotion in Autonomous Robots*

WORK EXPERIENCE

**Senior Research Scientist, IBM Thomas J. Watson Research Center** Apr 2017- present
Technical leader for research efforts for knowledge-graph infused pretraining of transformers-based large language models for tasks like question answering and factuality verification. Previously, I have led research efforts in text-based reinforcement learning and computer vision. My research has been published in top conferences like EMNLP, AAAI, ACL, WACV, ICASSP, and ICIP while also receiving widespread media coverage.

**Researcher, NEC Central Research Labs, Japan** Oct 2014 - Mar 2017
Deep learning-based infrastructure surveillance using computer vision methods. Developed a vision-based crack detection system for crack detection from road videos. This technology showed real-time performance with state-of-the-art crack localization accuracy. This research was covered by Japanese media for crack detection on airport runways and was published at the top WACV conference.

SELECTED PUBLICATIONS

**1)** *Subhajit Chaudhury*, Sarathkrishna Swaminathan, Chulaka Gunasekara, Maxwell Crouse, Srinivas Ravishankar, Daiki Kimura, Keerthiram Murugesan, Ramon Fernandez Astudillo, Tahira Naseem, Pavan Kapanipathi and Alexander Gray, **X-FACTOR: A Cross-metric Evaluation of Factual Correctness in Abstractive Summarization**, **EMNLP**, 2022.

**2)** Keerthiram Murugesan, *Subhajit Chaudhury*, Kartik Talamadupula, **Eye of the Beholder: Improved Relation Generalization for Text-based Reinforcement Learning Agents**, **AAAI**, 2022.

**3)** *Subhajit Chaudhury*, Prithviraj Sen, Masaki Ono, Daiki Kimura, Michiaki Tatsubori and Asim Munawar, **Neuro-symbolic Approaches for Text-based Policy Learning**, **EMNLP** 2021.

**4** Daiki Kimura, Masaki Ono, *Subhajit Chaudhury*, Ryosuke Kohita, Akifumi Wachi, Don Joven Agravante, Michiaki Tatsubori, Asim Munawar and Alexander Gray, **Neuro-symbolic Reinforcement Learning with First-Order Logic**, **EMNLP** 2021.

**5)** *Subhajit Chaudhury*, Daiki Kimura, Kartik Talamadupula, Michiaki Tatsubori, Asim Munawar, and Ryuki Tachibana, **Bootstrapped Q-learning with Context Relevant Observation Pruning to Generalize in Text-based Games**, **EMNLP** 2020.

**6)** *Subhajit Chaudhury* and Toshihiko Yamasaki, **Investigating Generalization in Neural Networks under Optimally Evolved Training Perturbations**, IEEE **ICASSP**, 2020.

**7)** Daiki Kimura, *Subhajit Chaudhury*, Minori Narita, Asim Munawar, and Ryuki Tachibana, **Adversarial Discriminative Attention for Robust Anomaly Detection**, IEEE **WACV**, 2020.

**8)** Daiki Kimura, *Subhajit Chaudhury*, Ryuki Tachibana and Sakyasingha Dasgupta, **Internal Model from Observations for Reward Shaping**, **ICML**, Adaptive and Learning Agents (ALA) 2018 and **AAAI**, Reinforcement Learning in Games, 2019.

**9)** Tadanobu Inoue, *Subhajit Chaudhury*, Giovanni De Magistris and Sakyasingha Dasgupta, **Transfer learning from synthetic to real images using variational auto-encoders for robotic applications**, IEEE **ICIP**, 2018.

**10)** *Subhajit Chaudhury*, Gaku Nakano, Jun Takada, Akihiko Iketani, **Spatial-temporal motion field analysis for crack detection on concrete surfaces**, IEEE **WACV** 2017.

## Academic Awards and Achievements

- **Best Paper Award** (1st in 126 accepted papers) and **Best Presentation Award** at Symposium on Sensing via Image Information (SSII), 2019.
- **Best student paper, honorable mention** (out of 321 papers) at **MIRU 2019**, a top domestic Computer Vision conference in Japan.
- Won **Research Encouragement award** at Pattern Recognition and Media Understanding (**PRMU 2021**) conference.
- Received **Ph.D. Travel Grant** for **AAAI 2020 Doctoral Consortium**.
- Secured All India Rank **33 out of 110,125** students in Electrical Engineering, GATE-2012.
- Secured rank **86/80,000** in West Bengal Joint Entrance Examination, 2008 for Engineering.

## Media Coverage

**1) Media Coverage of the Table-tennis work with the Japan Institute of Sports Sciences**: Nikkei Voicy (https://voicy.jp/channel/865/87438), Nikkan Kogyo Shimbun ( https://newswitch.jp/p/22822), ZDNet (https://japan.zdnet.com/article/35155927/), Softbank Creative (https://www.sbbit.jp/article/bitsp2/37830)

**2) Coverage of the crack-detection work at NEC**: Nikkei (https://www.nikkei.com/article/DGXMZO57409840Q0A330C2LKA000/), Official announcement by NEC (https://jpn.nec.com/press/202003/20200331_03.html)

## Patents

A comprehensive list of my published patents can be found here: https://patents.justia.com/inventor/subhajit-chaudhury. I have over 15 filed patents out of which many are granted.

## Technical Skills

- **Programming Languages**: *Python, C++, Java*
- **Machine learning Tools**: *Pytorch, Tensorflow, Keras, scikit-learn*
- **Tools**: *Matlab, ROS, Gazebo, OpenCV, CUDA, OpenGL*

## Professional Activities

- Senior Program committee member for AAAI'23.
- Program Committee member: AAAI'22, AAAI'20, IJCAI'20, KBRL workshop@IJCAI'20.
- Reviewer: CVPR'21, CVPR'22, IJCAI'19, ICRA'20, ICRA'18, IROS'18, IEEE Transactions on Multimedia (TMM)'18, ECML-PKDD'19, IEEE Access Journal'21,