Rajat Sahay

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Education

- **Rochester Institute of Technology** — Rochester, NY
  Master of Science, Data Science — *August 2022 - April 2024*
- **Vellore Institute of Technology** — Vellore, India
  Bachelor of Technology, Computer Science and Engineering — *July 2018 - May 2022*

  Courses: *Operating Systems, Data Structures and Algorithms, Artificial Intelligence, Networking, Database Management Systems, Theory of Computation and Compiler Design*

Publications

Kiran, M., Nguyen-Meidine, L.T., **Sahay, R.**, Cruz, R.M.O.E., Blais-Morin, L.A. and Granger, E., 2022. Dynamic Template Selection Through Change Detection for Adaptive Siamese Tracking. In *2022 International Joint Conference on Neural Networks (IJCNN)*. IEEE.

Kiran, M., Nguyen-Meidine, L.T., **Sahay, R.**, Cruz, R.M.O.E., Blais-Morin, L.A. and Granger, E., 2022, June. Generative Target Update for Adaptive Siamese Tracking. In *International Conference on Pattern Recognition and Artificial Intelligence*. Springer, Cham.

Sahay, R. and Thais, S., 2021, December. Graph Segmentation in Scientific Datasets. In *NeurIPS Workshop on Machine Learning and the Physical Sciences.*

Sahay, R., 2021, June. Unrestricted Adversarial Attacks on Vision Transformers. In *CVPR Workshop on Adversarial Machine Learning in Real-World Computer Vision Systems and Online Challenges.*

Sahay, R., Suryawanshi, R., Jha, R., Rajkumar, R. and Nedunchezhian, P., 2021, May. A Community Detection based Approach Towards Annotating Large Scale Image Datasets. In *International Conference on Contemporary Engineering and Technology.*

Under Review

Sahay, R. Deep Video Inpainting Detection with Multispectral Transformers. 2022. *In review.*

Sahay, R. and Coustaty, M. An Enhanced Prototypical Network Architecture for Few-Shot Handwritten Urdu Character Recognition. 2022. *Under Revision.*

Experience

- **NASA Jet Propulsion Laboratory** — Pasadena, CA (Remote)
  Visiting Student Researcher, Juno Science Mission — *September 2021 - June 2022*
  - **Mentor:** Glenn Orton, Planetary and Exoplanetary Atmospheres
  - Conducted multispectral image analysis to understand dynamics of storms on Jupiter. Focused on understanding the reason for temporal color changes in Oval BA - the second largest storm on Jupiter.
  - Collated and analyzed data taken from NASA IRTF, Gemini North Observatory, and the Hubble Space Telescope.
- **Princeton University** — Princeton, NJ (Remote)
  Research Fellow — *April 2021 - August 2021*
  - **Mentor:** Savannah Thais, IRIS-HEP Software Institute
  - Incorporated geometric machine learning methods to help solve High-Energy Physics problems.
  - Explored non-deterministic graph clustering as a precursor to deep learning pipelines, helping improve accuracy and increase efficiency of downstream tasks.
- **ÉTS Montréal** — Montréal, QC (Remote)
  Globalink Research Intern — *May 2021 - July 2021*
  - **Mentor:** Eric Granger, ÉTS-LIVIA Laboratory
  - Constructed adaptive strategies to help improve precision of MOT applications by adaptively generating and selecting dynamic templates.
  - Contributed to deployment of research in real-world scenarios, in collaboration with Genetec Inc.
- **Université de La Rochelle** — La Rochelle, France (Remote)
  Research Intern — *June 2020 - April 2021*
  - **Mentors:** Mickaël Coustaty, Jean-Loup Guillaume, L3i Laboratoire
  - Developed an intelligent character recognition system to understand Indic languages using constrained datasets.
  - Demonstrated significant improvement over current SOTA scores in zero-shot and few-shot learning
- **CamCann Smart Systems** — Vellore, India
  Computer Vision Engineer — *January 2020 - June 2020*
  - Contributed to the development of a video analytics software package to gain insights on shopping patterns, customer interests and duration-of-interest.

- Provided development and testing support to deploy end-to-end software subsystems.
- Facilitated communication as a release coordinator to ensure effective and timely delivery of changes.

- **Indian Institute of Technology, Indore** Indore, India
  Research Intern *May 2019 - June 2019*
  - **Mentor:** Surya Prakash, PAMI Laboratory
  - Explored novel solutions for visual odometry tasks in constrained environments.
  - Developed a probabilistic tracking paradigm to complement multi-object tracking frameworks.

Honors and Awards

- **RIT Graduate Scholarship** 2022
  Awarded to incoming graduate students based on previous academic and research merits.
- **NASA JPL Visiting Student Research Program & SPLISYS Fellowship** 2021
  Awarded to fund my research at NASA Jet Propulsion Laboratory form September 2021 to June 2022.
- **Mitacs Globalink Research Fellowship** 2021
  Awarded by Mitacs and AICTE to fund my research at ÉTS Montréal from May 2021 to July 2021.

Volunteer Experience

Professional Service

ICML 2022 (Reviewer)

Freelance Writing

Selected Publications

- **Model Observability in Machine Learning**
  Heartbeat (Comet ML) *February 2022*
- **Learning to Learn More: Meta Reinforcement Learning**
  Towards Data Science *October 2020*
- **Statistical Pitfalls in Data Science**
  Towards Data Science (Recommended by Medium curators) *June 2020*

Miscellaneous

- **Open Source Contributor, Ludwig AI - Uber ATG** Remote
  Added support for new image and video encoders supporting Ludwig functionalities. *August 2020 - November 2020*
- **Machine Learning Associate, Ignitus LMS Inc.** Remote
  Developed interactive Jupyter notebooks for tutorials included in the Ignitus ML MOOC. *May 2019 - June 2020*
- **Computer Literacy Project, Citizens Association for Child Rights** Mumbai, India
  Provided computer education to over 3000 students from financially excluded backgrounds. *May 2018 - June 2018*