

Jaskirat Singh | Academic CV

2nd year Ph.D. Student in Computer Science | Past Intern @ Adobe Research

✉ Email: jaskirat.singh@anu.edu.au 🌐 Homepage 🎓 Google Scholar

Research Interests

Controllable Image Synthesis and Editing, Creative Content Generation, Reinforcement Learning

Education

- **The Australian National University** **Expected**
Ph.D. in Computer Science *Sep' 21–Present*
Supervisors: [Prof. Liang Zheng](#) and [Prof. Stephen Gould](#)
- **The Australian National University** **GPA: 7/7**
Master of Machine Learning and Computer Vision *Jul' 19–Jul' 21*
🎓 Awarded University Medal for Exceptional Academic Excellence
- **Indian Institute of Technology, Delhi** **GPA: 9.3/10**
Bachelor of Technology (B.Tech), Electrical Engineering *2013–2017*
Specialization in Intelligent and Cognitive systems

Publications

1. [SmartMask: Context Aware High-Fidelity Mask Generation for Fine-grained Object Insertion and Layout Control](#)
Jaskirat Singh, Jianming Zhang, Qing Liu, Cameron Smith, Zhe Lin, Liang Zheng. 2023
Work done during internship at Adobe Research, US Research Patent (Adobe)
2. [Divide, Evaluate, and Conquer: A Decompositional Perspective on Evaluating and Improving Text-to-Image Alignment](#)
Jaskirat Singh, and Liang Zheng. 2023
NeurIPS 2023
3. [High-Fidelity Guided Image Synthesis with Latent Diffusion Models](#)
Jaskirat Singh, Stephen Gould, and Liang Zheng. 2023
CVPR 2023
4. [Paint2Pix: Interactive Painting based Progressive Image Synthesis and Editing](#)
Jaskirat Singh, Liang Zheng, Cameron Smith, and Jose Echevarria. 2022
ECCV 2022
5. [Intelli-Paint: Towards Developing Human-like Painting Agents](#)
Jaskirat Singh, Cameron Smith, Jose Echevarria, and Liang Zheng. 2022
ECCV 2022, US Research Patent (Adobe)
6. [Combining Semantic Guidance and Deep Reinforcement Learning For Generating Human-Level Paintings](#)
Jaskirat Singh, and Liang Zheng. 2021
CVPR 2021

Journal

7. [Probabilistic and Semantic Descriptions of Image Manifolds and Their Applications](#)
Peter Tu, Zhaoulan Yang, Richard Hartley, Zhiwei Xu, Jing Zhang, Dylan Campbell, **Jaskirat Singh**, Tianyu Wang. 2023
Frontiers in Computer Science, 2023

Professional Experience

Professional

Research Intern <i>Creative Intelligence Lab with Dr. Zhe Lin & Dr. Jianming Zhang</i>	Adobe Research <i>Jun' 23 – Sep' 23</i>
Research Assistant <i>Geometry of Learning Lab with Prof. Richard Hartley</i>	Australian National University <i>Mar' 23 – Jun' 23</i>
Research Intern <i>Graphics Intelligence and Learning Lab with Dr. Jose Echevarria & Cameron Smith</i>	Adobe Research <i>Jun' 21 – Dec' 21</i>
Research Scholar <i>Computer Vision Lab with Prof. Liang Zheng</i>	Australian National University <i>Dec' 20 – Feb' 21</i>
Machine Learning Research Engineer <i>Role: Mathematical Modeling for Optimizing Advertising Solutions.</i>	Yahoo Japan <i>Oct' 17– Sept '18</i>

Teaching

Teaching Assistant <i>Introduction to Machine Learning (COMP6670)</i>	Australian National University <i>Jul' 20 – Nov' 20</i>
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Services

Conference Reviewer
CVPR'24, ICCV'23, CVPR'23, CVPR'22, TVCJ'21, ACM-TOMM'21, ICIG'21.

Honors and Achievements

-  **Awarded University Medal** for academic excellence at the Australian National University.
-  **Awarded Chancellors Letter of Commendation** at the Australian National University.
- **Awarded ANU Computer Science Summer Research Grant** (\$5k).
- **Invited for delivering a tutorial** on "Applying deep reinforcement learning for computer vision research" by the **Australian Centre for Robotic Vision (ACRV)** group.
- Our project "Connected Stories of Australia" has been awarded as the **best innovative design project** by the **National Museum of Australia**.
- **Won national hackday at Yahoo Japan**, among 54 competing teams from all across Japan, for developing a real-time application for **facial attribute modification using reversible GANs**.
- Received **IIT Delhi Merit Award & Scholarship** for outstanding academic performance.
- Secured **All India Rank 128 in IIT-JEE** among 1.4 million aspirants appearing for the exam.
-  **Won the Silver Medal at National FIDE Rated Chess Tournament.**

Referees

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| ◦ Prof. Liang Zheng - Associate Professor |  Australian National University |
| ◦ Prof. Stephen Gould - Senior Professor |  ANU, Amazon |
| ◦ Dr. Jianming Zhang - Principal Research Scientist |  Adobe Research |
| ◦ Dr. Zhe Lin - Principal Research Scientist |  Adobe Research |

Advanced Courses

- Advanced Topics in Machine Learning (Convex & Differentiable Optimization) Class rank: 1
- Statistical Machine Learning (Bayesian Neural Networks) Class rank: 1
- Advanced Topics in Computer Vision (Probabilistic Graphical Models) Class rank: 1
- Advanced Topics in Mechatronics (Computer Vision and Deep Learning)

Technical Skills

- **Programming Languages and Tools:** Python, Java, C++, \LaTeX
- **Deep Learning Frameworks:** Pytorch, Tensorflow, Jax
- **Big Data:** Hadoop, Hive, SQL, Teradata
- **Web Development:** HTML5, CSS, Javascript