Bindita Chaudhuri

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Education

University of Washington **2016–2021**
Ph.D. (and M.S.), Computer Science and Engineering, Grade: 3.72/4.0 *Seattle, USA*
- *Advisors*: Prof. Linda Shapiro (Graphics and Imaging Laboratory) and Dr. Alex Colburn (Apple)
- *Research Interests*: Computer Vision, Computer Graphics, Machine Learning
- *Thesis*: Deep Facial Expression Modeling and 3D Motion Retargeting from 2D Images

Indian Institute of Technology Bombay **2014–2016**
M.Tech., Communication and Signal Processing, Electrical Engineering, Grade: 9.83/10.0 *Mumbai, India*
- *Advisor*: Prof. Subhasis Chaudhuri (Vision and Image Processing Laboratory)
- *Thesis*: Region-based Retrieval of Remote Sensing Images using Graph-Theoretic Approaches

Jadavpur University **2010–2014**
B.E., Electronics and Telecommunication Engineering, Grade: 9.65/10.0 *Kolkata, India*
- *Advisor*: Prof. Iti Saha Misra (Operations and Networking Laboratory)
- *Thesis*: Low Cost Low Bandwidth Virtual Education Platform Design for Underserved People (SIGHT, IEEE)

Work Experience

Meta (Reality Labs) **July 2021 - present**
Research Scientist, XR Tech Team *Redmond, WA*
Exploring AI algorithms for XR technology

Facebook Reality Labs - Research **June - Nov, 2020**
Research Intern, Virtual Humans Team *Sausalito, CA*
Photorealistic texture synthesis for 3D Humans

Microsoft Cloud+AI **Jan 2019–May 2020**
Research Contractor, Cognition Team *Redmond, WA*
High-fidelity personalized face avatar generation and stabilized 3D face tracking for in-the-wild videos

Microsoft Research **Mar - Sep, 2018**
Research Intern, Visual Intelligence Group *Redmond, WA*
Multi-task deep learning framework for real time facial motion retargeting; **Puppets** feature of **SwiftKey** [media]

Intel Labs **June - Sep, 2017**
Graduate Intern Technical, Computational Imaging Lab *Santa Clara, CA*
Deep view synthesis from HD multi-camera array images using optical flow prediction and image super-resolution

University of Trento **Summer 2015**
Visiting Researcher, Department of Information Engineering and Computer Science *Trento, Italy*
Unsupervised and semi-supervised graph-theoretic approaches to content-based retrieval of remote sensing images

Variable Energy Cyclotron Centre, R&D unit, Government of India **Summer 2013**
Intern, Accelerator Instrumentation and Control section *Kolkata, India*
Design and implementation of a digital integrator using FPGA

Publications

Conference Proceedings

1. **Semi-supervised Synthesis of High-Resolution Editable Textures for 3D Humans**
Bindita Chaudhuri, Nikolaos Sarafianos, Linda Shapiro, Tony Tung
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2021 [webpage]

2. **Personalized Face Modeling for Improved Face Reconstruction and Motion Retargeting**
Bindita Chaudhuri, Noranart Vesdapunt, Linda Shapiro, Baoyuan Wang
IEEE European Conference on Computer Vision (ECCV), 2020 **[Spotlight]** [webpage]

3. **Joint Face Detection and Facial Motion Retargeting for Multiple Faces**
Bindita Chaudhuri, Noranart Vesdapunt, Baoyuan Wang
IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2019 [webpage]

4. **GestureCalc: An Eyes-Free Calculator for Touch Screens**
Bindita Chaudhuri, Leah Perlmutter*, Justin Petelka, Philip Garrison, James Fogarty, Jacob O. Wobbrock, Richard E. Ladner (*equal contribution)*
ACM SIGACCESS Conference on Computers & Accessibility (ASSETS), 2019 [pdf]

5. **Learning to Generate 3D Stylized Character Expressions from Humans**
Deepali Aneja, Bindita Chaudhuri, Alex Colburn, Gary Faigin, Linda Shapiro, Barbara Mones
IEEE Winter Conference on Applications of Computer Vision (WACV), 2018 [webpage]

Journal Articles

6. **Multi-Label Remote Sensing Image Retrieval using a Semi-Supervised Graph-Theoretic Method**
Bindita Chaudhuri, Begüm Demir, Subhasis Chaudhuri, Lorenzo Bruzzone
IEEE Transactions on Geoscience and Remote Sensing, vol. 56, no. 2, pp. 1144-1158, Feb 2018 [webpage] [pdf]

7. **Region-Based Retrieval of Remote Sensing Images using an Unsupervised Graph-Theoretic Approach**
Bindita Chaudhuri, Begüm Demir, Lorenzo Bruzzone, Subhasis Chaudhuri
IEEE Geoscience and Remote Sensing Letters, vol. 13, no. 7, pp. 987-991, July 2016 [pdf]

Patents, Workshops and others

8. **View interpolation of multi-camera array images with flow estimation and image super resolution using deep learning**
Bindita Chaudhuri, Fan Zhang, Oscar Nestares
US Patent 10,547,823, 2020 [pdf]

9. **Demonstration of GestureCalc: An Eyes-Free Calculator for Touch Screens**
Leah Perlmutter, Bindita Chaudhuri*, Justin Petelka, Philip Garrison, James Fogarty, Jacob O. Wobbrock, Richard E. Ladner (*equal contribution)*
ACM SIGACCESS Conference on Computers & Accessibility (ASSETS), 2019 [demo paper]

10. **Face Recognition under varying conditions using Discrete Wavelet Transform and Supervised Learning**
Bindita Chaudhuri, Digbalay Bose, Ullash Bhattacharya
Workshop on Applications of Wavelets/Time-Frequency Methods/Multirate Systems, April 2015 [poster]

Academic Projects

- Local collision avoidance using laser sensor data for a nano-drone
- Comparative study of model-free reinforcement learning methods for continuous control
- Video stabilization and real-time tracking of non-rigid objects
- Image reconstruction from compressive measurements
- Code optimization in designing a compiler (English grammar parser)
- Survey on effects of electromagnetic radiation from mobile towers, Wi-Fi hotspots etc. at various locations in Kolkata [The Times of India article]

Technical skills

- **Programming Languages:** Python, C/C++, MATLAB, Visual C#, Javascript, VHDL
- **Software/Tools:** PyTorch, Tensorflow, CUDA, OpenCV, OpenGL, OpenAI Gym, ModelSim, Circuit Maker
- **Hardware:** Spartan-3A DSP 1800, Spartan-3E, DSP TMS320C54X, eZDSP TMS320C5515

Honors and Awards

- *People's Choice Award*, UW CSE Affiliates Research Day, 2017 (link)
- *Department Academic Excellence Award*, Annual Convocation, IIT Bombay, 2016
- *University Gold Medal & 7 others*, Annual Convocation, JU, 2014 (details)
- *The Supriya Basu Scholarship & 2 others*, Topper across all engineering majors, JU, 2012 & 2013 (details)

Academic Activities

- **Teaching Assistant**, UW CSE (2016-2021) and IIT Bombay EE (2014-2016)
  Courses taught: Computer Vision, Artificial Intelligence, Algorithms, Compilers, Digital Communication, Digital Signal Processing (grading, labs and quizzes)
- **Area Chair (student)**, UW CSE Graduate Admissions Committee, 2020
- **Reviewer** [Publons profile]:
  - IEEE Virtual Reality (VR) Conference, 2022
  - ACM SIGGRAPH Asia, 2021
  - International Conference on Learning Representations (ICLR), 2021 (Rethinking ML Papers Workshop)
  - Elsevier Computer Vision and Image Understanding Journal, 2021
  - Elsevier Information Processing & Management Journal, 2021
  - IEEE Transactions on Geoscience and Remote Sensing
  - IEEE Geoscience and Remote Sensing Letters
  - SPIE Journal of Applied Remote Sensing
  - IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing
  - Wiley Computer Animation and Virtual Worlds
  - IET Image Processing, IEEE Access, The Visual Computer (Springer Nature)

Extracurricular Activities

- *Departmental Representative* & Treasurer and Member of cultural team, Jadavpur University
- *Best Swimmer*, Special Mention and Citation for Sports in Inter-IIT swimming competition, IIT Bombay

References

- Prof. Linda Shapiro
- Dr. Rakesh Ranjan
- Dr. Baoyuan Wang