AJINKYA KADU

Applied Mathematician in Computational Imaging

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EXPERIENCE

Postdoctoral Researcher
NANOlab Center of Excellence, University of Antwerp

July 2021 – Ongoing | Antwerp, Belgium

- Advancing atomic-resolution imaging via novel electron tomography techniques, significantly impacting drug-delivery & pharmaceutics
- Mentoring 5 postgrad researchers in using cutting-edge computational tools for discovering novel phenomena using electron microscopy

Postdoctoral Researcher
National Research Institute for Mathematics and Computer Science (CWI)

July 2020 – June 2021 | Amsterdam, Netherlands

- Led the design of an efficient, time-resolved 3D algorithm for dynamic object imaging, enhancing X-ray tomography capabilities

PhD Researcher
Utrecht University

July 2015 – June 2020 | Utrecht, Netherlands

- Initiated and developed an innovative shape-sensing framework that revolutionized earth exploration, adopted for implementation in Shell's North Sea project, delivering unprecedented detail and accuracy
- Devised pioneering convex programs for NP-hard problems discrete & single-shot X-ray tomography for scientific applications
- Demonstrated exceptional communication skills and expertise through the delivery of 12 invited talks, 15 oral presentations, and 8 poster exhibitions, disseminating complex scientific findings to diverse audience

Scientific Consultant
Simreka Inc

Jan 2019 – Sep 2020 | Utrecht, Netherlands

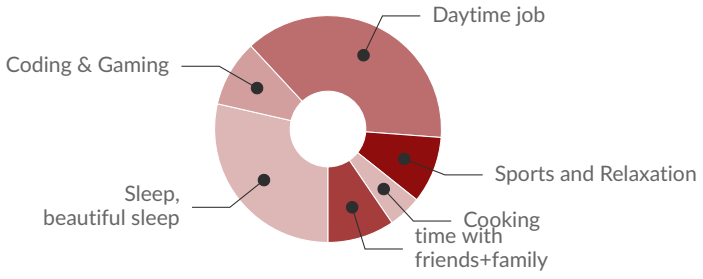
- Developed a predictive platform to identify non-toxic alternatives in manufacturing units, promoting safer industrial processes

Visiting Research Intern
Mistubishi Electric Research Labs

Apr 2018 – Sep 2018 | Cambridge, MA, USA

- Developed an inverse scattering framework to enhance underground radar systems, improving industrial pipe infrastructure analysis

A DAY OF MY LIFE



MY LIFE PHILOSOPHY

"Simplicity is the key to solving complex computational mysteries."

MOST PROUD OF

Research Fellowships
Managed individual research at University of Antwerp (University fellowship) and Utrecht University (Shell-NWO fellowship)

Mentorship Initiative
Spearheaded a team of 19 mentors, providing comprehensive academic guidance to over 124 students at IIT-B

Leadership in Student Chapter
Established and managed the SIAM student chapter at Utrecht, while also overseeing its website and social awareness campaigns

STRENGTHS

Persevering | Strong Mathematics | Problem Solver | Research-Driven | Eye for detail | Project Management

Python | MATLAB | C++ | Image Processing | X-ray Tomography | Inverse Scattering | Electron microscopy | Machine Learning | 3D Reconstruction | Computer Vision | Scientific Computing | Convex Optimization

LANGUAGES

English

Hindi

Dutch

EDUCATION

Ph.D. in Mathematics
Utrecht University

July 2015 – Dec 2019

Thesis title: Discrete Seismic Tomography

B.Tech & M.Tech. in Aerospace Engineering
Indian Institute of Technology, Bombay

July 2010 – June 2015

PUBLICATIONS

Patents

- H. Mansour, **A. Kadu**, P. Boufounos, and D. Liu, *Tomographic imaging system*, US Patent 11,204,317, Dec. 2021.

Selected Journal Articles

- T. M. Craig, **A. A. Kadu**, K. J. Batenburg, and S. Bals, "Real-time tilt undersampling optimization during electron tomography of beam sensitive samples using golden ratio scanning and recast3d," *Nanoscale*, vol. 15, no. 11, pp. 5391–5402, 2023.
- S. Kavak, **A. A. Kadu**, N. Claes, *et al.*, "Quantitative 3d investigation of nanoparticle assemblies by volumetric segmentation of electron tomography data sets," *The Journal of Physical Chemistry C*, 2023.
- W. Heyvaert, A. Pedrazo-Tardajos, **A. Kadu**, *et al.*, "Quantification of the helical morphology of chiral gold nanorods," *ACS Materials Letters*, vol. 4, no. 4, pp. 642–649, 2022.
- M. T. Zeegers, **A. Kadu**, T. van Leeuwen, and K. J. Batenburg, "Adjust: A dictionary-based joint reconstruction and unmixing method for spectral tomography," *Inverse problems*, vol. 38, no. 12, p. 125 002, 2022.
- T. Altantzis, D. Wang, **A. Kadu**, A. Van Blaaderen, and S. Bals, "Optimized 3d reconstruction of large, compact assemblies of metallic nanoparticles," *The Journal of Physical Chemistry C*, vol. 125, no. 47, pp. 26 240–26 246, 2021.
- **A. Kadu**, T. Van Leeuwen, and K. J. Batenburg, "Cosharp: A convex program for single-shot tomographic shape sensing," *Inverse Problems*, vol. 37, no. 10, p. 105 005, 2021.
- **A. Kadu**, H. Mansour, and P. T. Boufounos, "High-contrast reflection tomography with total-variation constraints," *IEEE Transactions on Computational Imaging*, vol. 6, pp. 1523–1536, 2020.
- F. Bijma, Y. E. Boink, **A. Kadu**, J. C. de Munck, R. de Verclos, *et al.*, "Optimal allocation of customers to sorting centers-postnl," 2019.
- **A. Kadu** and T. van Leeuwen, "A convex formulation for binary tomography," *IEEE Transactions on Computational Imaging*, vol. 6, pp. 1–11, 2019.
- **A. Kadu**, C. Beentjes, A. Di Bucchianico, *et al.*, "Equalizing the cost of health insurance," *Proceedings of the 126th European Study Group Mathematics with Industry*, p. 29, 2018.
- **A. Kadu**, T. van Leeuwen, and W. A. Mulder, "Salt reconstruction in full-waveform inversion with a parametric level-set method," *IEEE Transactions on Computational Imaging*, vol. 3, no. 2, pp. 305–315, 2016.

Selected Conference Proceedings

- A. Bose, A. Kadu, H. Mansour, *et al.*, "Thz multi-layer imaging via nonlinear inverse scattering," in *2019 44th International Conference on Infrared, Millimeter, and Terahertz Waves (IRMMW-THz)*, IEEE, 2019, pp. 1–2.
- **A. Kadu**, H. Mansour, P. T. Boufounos, and D. Liu, "Reflection tomographic imaging of highly scattering objects using incremental frequency inversion," in *ICASSP*, IEEE, 2019, pp. 7735–7739.
- **A. Kadu** and R. Kumar, "Decentralized full-waveform inversion," in *80th EAGE Conference and Exhibition 2018*, EAGE Publications BV, vol. 2018, 2018, pp. 1–5.
- **A. Kadu**, R. Kumar, and T. van Leeuwen, "Full-waveform inversion with mumford-shah regularization," in *2018 SEG International Exposition and Annual Meeting*, OnePetro, 2018.
- **A. Kadu**, T. Van Leeuwen, and W. Mulder, "A parametric level-set approach for seismic full-waveform inversion," in *2016 SEG International Exposition and Annual Meeting*, OnePetro, 2016.

REFEREES

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