Md. Tanvir Hossain

Software Engineer | XR, 3D and Computer Vision Developer
Christchurch, New Zealand | mdtanvir.hossain@pg.canterbury.ac.nz
mthcse.com | linkedin.com/in/tanvirbdcseru | ORCID 0000-0002-6268-4482

Work rights: New Zealand student visa with open work rights (any employer, any occupation), valid to March 2028.

PROFILE

Software engineer with four years of commercial development, running a software company since 2017, and current R&D work building real-time sensing and XR systems at HIT Lab NZ, University of Canterbury. Holds a Master of Machine Learning and Computer Vision from the Australian National University. Works across the full lifecycle, from client requirements to deployment and support, in Python, C#, JavaScript and PHP. Recent New Zealand work includes a browser-based 3D model viewer for an agricultural machinery distributor.

TECHNICAL SKILLS

- **Languages:** Python, C#, JavaScript, PHP, Java, C/C++, SQL.
- **XR and 3D:** Unity, Unreal Engine, A-Frame, Three.js, Blender, Meta XR Presence Platform, PC VR, Leap Motion, ZED 2 stereo camera, FreeCAD, QCAD.
- **Machine learning and computer vision:** deep learning, transformer models, object counting, image processing, time-series forecasting.
- **Web, mobile and data:** Laravel, CodeIgniter, ASP.NET, WordPress, Android, iOS, Xamarin; MySQL, MS SQL Server, Oracle, SQLite; Entity Framework, NHibernate.
- **Sensing and hardware:** wearable IMUs, motion capture, Arduino, Raspberry Pi, microcontrollers.
- **Ways of working:** requirements gathering with clients, user research and testing, Jupyter-based data analysis, AI pair-programming tools (Claude Code, Gemini CLI); familiar with SimPro job-management software (self-taught).

EXPERIENCE

PhD Researcher (R&D) **Nov 2024 to present**
HIT Lab NZ, University of Canterbury, Christchurch

- Building a real-time gait sonification system: wearable IMUs and stereo-camera computer vision (ZED, ArUco-based coordinate matching) driving adaptive audio feedback.
- Developing the audio engine, sensor-data integration, segment annotation tools and Jupyter analysis pipelines.
- Testing the system in multi-day user studies with coach-athlete pairs recruited through High Performance Sport New Zealand.

Freelance Developer, Web 3D Model Viewer **Feb 2025 to Nov 2025**
Client: New Zealand agricultural machinery distributor

- Built a browser-based interactive 3D model viewer using A-Frame (Three.js).
- Prepared and optimised 3D models in Blender for real-time display on the web; scoped a VR extension for a later phase.

Managing Director **2017 to present**
CODEVRS Limited, Bangladesh

- Leads a software company delivering custom applications for clients; since 2022 serves local clients, with business conducted mainly through Facebook.
- Built custom CRM modules for clients, including customer records, quoting and scheduling.
- Developed externally programmable scanner-based Optical Mark Recognition (OMR) software, and VR 360-degree tours and applications.

Software Engineer, then Senior Software Engineer **2012 to 2016**
rajIT Solutions Ltd., Rajshahi, Bangladesh

- Lead programmer on local and government projects; full-lifecycle delivery from requirements to deployment and maintenance.
- Built MediRit pharmacy-management software (C#, Telerik WinForms, NHibernate), an OMR solution, and an automated result processor and report generator (C#, Entity Framework); developed custom CRM modules.

Assistant Professor and Lecturer, Computer Science and Engineering **Aug 2016 to present (study leave)**
University of Rajshahi, Bangladesh

- Project lead and senior developer for university automation systems, including the admission system and a bank-integrated exam-fee payment system; co-developed and maintained software used to manage various university bodies.
- Led an interactive 360-degree tour of the whole campus with a resource-tracking application; coordinated the AR/VR/MR Lab from 2018.
- Taught programming, software engineering, databases, computer graphics and HCI/VR.

Other roles

- Research Assistant (contract), Department of Management, Marketing and Tourism, University of Canterbury, Mar to Apr 2025.
- Teaching Assistant, COMP6730 Programming for Scientists, Australian National University, Semester 1, 2023.

EDUCATION

PhD, Human Interface Technology, HIT Lab NZ, University of Canterbury **Nov 2024 to present**

Master of Machine Learning and Computer Vision, Australian National University (GPA 5.94/7; Australia Awards Scholarship) **2024**

M.Sc. in Computer Science and Engineering, University of Rajshahi (first in order of merit; CGPA 3.888/4) **2013**

B.Sc. (Hons) in Computer Science and Engineering, University of Rajshahi (first in order of merit; CGPA 3.720/4) **2012**

J2EE enterprise Java training (2.5 months, 96% average), Infosys Mysore Development Centre, India **2015**

SELECTED PUBLICATIONS

Hossain, M. T., Lindeman, R. W., Ingram, M., & Lukosch, S. (2026). Augmenting rhythm: A scoping review of technologies and feedback modalities in elite sport. Sports Engineering, 29, 32. https://doi.org/10.1007/s12283-026-00562-7

Hossain, M. T., Ameen, M. R., Islam, A., et al. (2026). Beyond ray-casting: Evaluating controller, free-hand, and virtual-touch modalities for immersive text entry. PECCII 2026. https://doi.org/10.1109/PECCII70991.2026.11661903

Hossain, M. T., Islam, A., & Ameen, M. R. (2026). CountFormer: A transformer framework for learning visual repetition and structure in class-agnostic object counting. IEEE QPAIN 2026. https://doi.org/10.1109/QPAIN69676.2026.11546546

Nine publications in total since 2017; full list on ORCID.

LANGUAGES

- Bengali: native. English: full professional proficiency; master's (ANU) and PhD (UC) studied in English; IELTS Academic overall 7.5 (2022).

REFEREES

Available on request, including New Zealand referees.