Amar M. Maharjan

✉ amar.maharjan@unt.edu | 🔗 amar-maharjan | 🌐 amarmhrjn | 📞 +1 940-703-3172 |
119 S Bonnie Brae St, Denton, TX-76201, USA.

Education

University of North Texas
Denton, Texas, US

Ph.D. Computer Science and Engineering (4.0) — *Fall 2016 – Fall 2022*

- Computer Vision and Intelligent System (CoVis) lab member
- Major research areas: Machine Learning, Computer Vision, Point Set Registration, Keypoint Detection and Correspondences, Unsupervised Learning, 3D Point Cloud, Deep Learning.
- Non-rigid registration of point set with large and uneven deformation.
- Gaussian Mixture Model (GMM), Density Estimation, Clustering, EM-Optimization.
- Local neighborhood structure: Stochastic Neighbor Embedding (SNE) or Locally Linear Embedding (LLE). Global shape constraint: Keypoint (landmark) correspondences.
- Unsupervised learning of keypoints and keypoint correspondences in 3D point clouds using deep learning.
- Segmentation, Object Detection, Classification, Multilayer Perceptron (MLP), Autoencoder, Statistical Shape Model (SSM).
- Depth cameras (RGB-D): Intel Realsense, Microsoft Kinect II.
- Dissertation: "Registration of Point Sets with Large and Uneven Non-Rigid Deformation"
- Advisor: Dr. Xiaohui Yuan

Tribhuvan University (University Campus)
Kirtipur, Nepal

M.Sc. Computer Science and Information Technology (Distinction) — *2005 – 2007*

- Thesis: "Selection of an Intermediate Representation for Program Analysis and Optimization"
- Supervisor: Dr. Shashidhar Ram Joshi

Tribhuvan University (Patan Multiple Campus)
Lalitpur, Nepal

B.Sc. Computer Science — *2001 – 2004*

Academic Experiences

Clinical Assistant Professor
Fall 2023 –

Department of Computer Science and Engineering, University of North Texas — *Denton, Texas*

- CSCE 1030 (003, 004) Computer Science I.
- CSCE 5640 (001, 003) Operating System Design.
- CSCE 4650/5650 Introduction to Compilation Techniques/Compiler Design.

Lecturer
Fall 2022 – Summer 2023

Department of Computer Science and Engineering, University of North Texas — *Denton, Texas*

- CSCE 1030 (003, 004) Computer Science I.
- CSCE 1040 (001 - 003) Computer Science II.
- CSCE 5640 (001, 003) Operating System Design.
- CSCE 4650/5650 Introduction to Compilation Techniques/Compiler Design.

Teaching Assistant (TA)
Fall 2021 – Spring 2022

Department of Computer Science and Engineering, University of North Texas — *Denton, Texas*

Teaching Fellow (TF)
Spring 2020 – Fall 2020

Department of Computer Science and Engineering, University of North Texas — *Denton, Texas*

- CSCE 4650 () Introduction to Compilation Techniques.
- CSCE 2110 (002, 005) Foundations of Data Structures.

Teaching Assistant (TA)
Fall 2016 – Fall 2019

Department of Computer Science and Engineering, University of North Texas — *Denton, Texas*

Lecturer
2016

Department of Computer Science and Information Technology (CDCSIT), TU — *Kathmandu, Nepal*

- Extra Profession Course for .NET framework and Web programming.

Research Publications

- Xiaohui Yuan, **Amar Maharjan**, "Non-rigid point set registration: recent trends and challenges", Artificial Intelligence (AIRE) (2022). https://doi.org/10.1007/s10462-022-10292-4

- **Amar Maharjan**, Xiaohui Yuan, "Registration of Human Point Set using Automatic Key Point Detection and Region-aware Features", Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (**WACV**), 2022, pp. 741-749.

- **Amar Maharjan**, Xiaohui Yuan, Qiang Lu, Yuqi Fan, and Tian Chen "Non-rigid registration of point clouds using landmarks and stochastic neighbor embedding" **Journal of Electronic Imaging**, 30(3), 031202 (5 January 2021). https://doi.org/10.1117/1.JEI.30.3.031202.

- Siyuan Liu, Xiaohui Yuan, **Amar Maharjan**, Jianfang Shi, Jianxia Liu, "Global and Local Structure Preservation in Non-Rigid Point Set Registration (accepted)", 3rd International Conference on Urban Intelligence and Applications (**ICUIA**), 2021.

- **Amar Maharjan**, Xiaohui Yuan, "Point Set Registration of Large Deformation Using Auxiliary Landmarks", 2nd International Conference on Urban Intelligence and Applications (**ICUIA**), 86-98, 2020.

- L. Kong, X. Yuan, and **A. M. Maharjan**, "A hybrid framework for automatic joint detection of human poses in depth frames," **Pattern Recognition**, vol. 77, pp. 216–225, 2018.

Papers under Review and working progress

- Xiaohui Yuan, **Amar Maharjan**, "Ordered Keypoint Detection from Point Clouds (working progress)", 2023.

- Xiaohui Yuan, **Amar Maharjan**, Qiang Lu, "Registration of Point Sets with Large Uneven Articulated Deformation (working progress)", 2023.

Skills

Deep learning: PyTorch, Autoencoder, Convolutional Neural Network (CNN), Multilayer Perceptron (MLP) etc.
Languages/Frameworks: Python, Matlab, C/C++, C#, Objective-C/C++, Java, SQL, R, JFlex, CUP
Web programming: ASP.NET, ASP.NET MVC, PHP, JavaScript, Node.js
Human Languages: English, Nepali, Newari, Hindi
Developer Tools: Microsoft Visual Studio, Jupyter Notebooks, Git, TFS, VS Code, Xcode, Eclipse, Tableau
Libraries: Point Cloud Library (PCL), OpenCV, Scikit-learn, NumPy, Pandas, Matplotlib.
Development: Agile, Scrum, Continuous Integration (CI).

Non-Academic Experiences

Web Architect Oct 2014 – Aug 2016

UBA Solutions Pvt. Ltd. *Lalitpur, Nepal*

- Responsibilities: High-level architecture design of a project, deciding development tools & technologies needed for a project, lead research team, motivating team, code review, and maintaining coding standard.

Sr. Software Engineer Nov 2009 – Oct 2014

UBA Solutions Pvt. Ltd. *Lalitpur, Nepal*

- Responsibilities: Team lead, research and development, projects supervise, documentation, coordination with project manager and system analyst.

Sr. Software Engineer Mar 2008 – Nov 2009

Data Analysis and Software Solutions (DASS) *Maharajgunj, Kathmandu, Nepal*

- Responsibilities: Create program designs in coordination with system analyst, project supervision and documentation, based on requirements, implement the prepared design documents, create test specifications for the programs.

Software Engineer   Jan 2008 – Mar 2008
Data Analysis and Software Solutions (DASS)   *Maharajgunj, Kathmandu, Nepal*
- Responsibilities: Based on requirements, implement the prepared design documents, create test specifications for the programs.

Projects

SkyFonts   2015 – 2016
UBA Solutions Pvt. Ltd.   *Lalitpur, Nepal*
- Cross-platform desktop-based cloud application that installs fonts from different service providers (such as google, fonts.com, linotype, myfonts) into the user's machine.
- Main features include auto font installation, removal, login-logout service, font searching.
- Frameworks/languages used: C++, Objective-C/C++, ASP.NET MVC.

FontSquare   2014 – 2015
UBA Solutions Pvt. Ltd.   *Lalitpur, Nepal*
- iOS mobile application that installs Google fonts into the mobile device. It has features like searching fonts, searching fonts by categories, selecting fonts, installing fonts, removing fonts, show detail font information etc.
- Frameworks/languages used: Objective-C/C++.

Font Conversion Tool (FCT)   2013 – 2014
UBA Solutions Pvt. Ltd.   *Lalitpur, Nepal*
- A tool that converts raw font formats, like TrueType (TTF), OpenType (OTF), into web-font formats like Embedded OpenType (EOT), Web Open Font Format (WOFF 1.0, 2.0), Scalable Vector Graphics (SVG).
- Frameworks/languages used: C/C++, C#, Java.

iManageProject   2010 – 2012
Data Analysis and Software Solutions (DASS)   *Maharajgunj, Kathmandu, Nepal*
- Online web application for project management. Visual Studio 2010 as main IDE using C# as programming language. MsSql Server 2008 as backend, 2010.
- Features: Login system, create projects, to-do lists, milestones, dashboard, writeboard, time tracking, chatting.
- Frameworks/languages used: C#, ASP.NET MVC.

Customer Relationship Management (CRM)   2009 – 2010
Data Analysis and Software Solutions (DASS)   *Maharajgunj, Kathmandu, Nepal*
- Web application using Visual Studio 2008 using VB as programming language in DASS Pvt. Ltd. (CarThink, USA). Backend in MSSQL Server 2005. Features: Login system, Email system, Searching facilities, Reports etc.
- Frameworks/languages used: VB.NET, ASP.NET.

Reliability And Monitoring Program (RAMP)   2008 – 2009
Data Analysis and Software Solutions (DASS)   *Maharajgunj, Kathmandu, Nepal*
- Desktop database application using Visual Studio 2005 using C# as programming language in DASS Pvt. Ltd. (A J Walter Aviation, UK).
- Features: Data entry, update, deletion, search. Showing and coloring in data grid view etc.
- Frameworks/languages used: C#, ASP.NET.

Network Video Recorder (NVR)   2008
Data Analysis and Software Solutions (DASS)   *Maharajgunj, Kathmandu, Nepal*
- Embedded programming using C in DASS Pvt. Ltd, (Tietech, Japan).
- Maintained modules of NVR. (http requests & response, formatting & detecting disks).
- Frameworks/languages used: C, Eclipse.

Honors and Awards

Multicultural Scholastic Award Program (MSA): Outreach Program Award 2017-2018, UNT Office of Outreach, University of North Texas, Denton, Texas, US
UNT-International Education Scholarship: 2018/19, UNT International office, University of North Texas, Denton, Texas, US
International Student Texas Public Education Grant (TPEG): 2018-19, University of North Texas, Denton, Texas, US
UNT-International Education Scholarship: 2019/20, UNT International office, University of North Texas, Denton, Texas, US
International Student Texas Public Education Grant (TPEG): 2019-20, University of North Texas, Denton, Texas, US
International Student Texas Public Education Grant (TPEG)-2019-20, University of North Texas, Denton, Texas, US
Porter-Evans Scholarship: 2020-21, University of North Texas, Denton, Texas, US
CSE Graduate Student Travel Grant: 2022, University of North Texas, Denton, Texas, US

Volunteer Experiences

- Mentor, Mark Cuban AI Bootcamp, UNT, 2020.

- Advisor, Nepalese Student Association at University of North Texas (NSA-UNT), University of North Texas (Jun 2019 – present).

- President, Nepalese Student Association at University of North Texas (NSA-UNT), University of North Texas (Jul 2018 – Jun 2019).

- Vice President, Nepalese Student Association at University of North Texas (NSA-UNT), University of North Texas (Sep 2017 – Jul 2018).

- Orientation Leader, UNT-International Undergraduate, Fall 2018.

- Orientation Leader, UNT-International Undergraduate, Spring 2018.

- Preview Guide, UNT Preview, Spring 2019.

- Preview Guide, UNT Preview, Spring 2017.

- Volunteer, Monotype & UBA Helping Hands for Earthquake Victims (May 2015 – May 2015).

  - Cause Disaster and Humanitarian Relief.
  - 2015 Sharing food and basic materials to build houses to the earthquake victims after massive earthquake (April 25, 2015) in locations: Dalchoki, Nibuwataar, Kipulcha in Nepal under the program: Monotype & UBA Helping Hands For Earthquake Victims.

Certificates

- **UNT Responsible Conduct of Research (RCR) Basic Course** - CITI Program - Jan 2022 - Jan 2026 - Credential ID: 46955973

Conferences and Tech Summit

- BILT Summit, Collin College, Frisco, Texas, May 8-9, 2023.

- IEEE/CVF Winter Conference on Applications of Computer Vision (**WACV**), Waikoloa, Hawaii, January 4-8, 2022.

- 2nd International Conference on Urban Intelligence and Aplications, Online Hefei, China, 2020.

- 2015 Invited and participated in Monotype Tech Summit-2015.