

Wathsala Widanagamaachchi

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- Summary** Data science professional with more than a decade of experience in analyzing large data sets & presenting data-driven insights across a variety of application domains. Capable of designing, developing, testing & deploying data-intensive solutions to translate business requirements into substantial deliverables & insights.
- Key Skills** Data Visualization, Big Data, Time Series Analysis, Data Science, Machine Learning, Deep Learning, Statistical Analysis, Pattern Recognition, Data Processing, Computer Graphics, Image Processing, High-performance Computing.
- Technical Skills**
Programming Languages: Python, C/C++/C#, R, Java
Data Visualization: Plotly, Seaborn, Power BI, R Studio, Visualization ToolKit, OpenGL
Machine Learning: Large Language Models (GPT-3), Scikit-learn, SciPy, NumPy, Pandas, Keras, TensorFlow, Matplotlib, MATLAB
Database/Server: Neo4j, MySQL, SQL Server
Web: AngularJS, D3.js, JavaScript, Html, Xml, CSS
Version Control: Git, AWS CodeCommit, TFS, SVN
Other Software & Tools: Jupyter Notebook, Jupyter Lab, AWS Services, Microsoft Visual Studio, Visual Studio Code, Eclipse, Xcode, MPI, Thrust, CMake, L^AT_EX, Figma, Canva, Corel-Draw, Adobe Suite (Photoshop, Illustrator, InDesign, Dreamweaver, Animate & Acrobat)
Operating System: Windows, MacOS, Linux
- Education**
- University of Utah** 2010 - 2017
PhD in Computing (Computer Graphics) Advisor: Dr. Valerio Pascucci
- Dissertation : Interactive Visualization & Exploration of Feature Evolution in Dynamic Data
- University of Colombo, Sri Lanka** 2005 - 2009
Bachelor of Science in Computer Science First Class with Honors
- Thesis : Facial Emotion Recognition using a Neural Network approach
- Work Experience**
- Division of Epidemiology, University of Utah** Research Associate
Salt Lake City, UT, USA June 2017 - Present
- Utilized Epidemiological predictive models to estimate cumulative incidence of COVID-19.
 - Power BI based analysis of demographic characteristics of patients with COVID-19 by wave.
 - Built a generalized visualization framework based on ipywidgets & plotly which can be easily integrated to develop new dashboards. This led to the implementation of over 10 dashboards for different projects.
 - Use of various machine learning techniques including autoencoders & multi-class classifiers for misdiagnosis identification & outbreak detection in healthcare data.
 - Extract & visualize query based information from medical ontologies using graph databases.
 - Designed & developed multiple C++ tools for management & delivery of concept mappings.
- CCS-7, Los Alamos National Laboratory** Graduate Research Assistant
Los Alamos, NM, USA Fall 2015 - May 2017
- A general framework allowing interactive exploration of large-scale time-varying datasets.
 - Understanding fission gas behavior in nuclear fuel through visualization.
- Scientific Computing and Imaging Institute, University of Utah** Research Assistant
Salt Lake City, UT, USA Spring 2010 - Fall 2015
- A topological framework allowing interactive exploration of large-scale time-varying datasets.
 - A flexible framework for creating space & time exploring panoramas.
- Salt Lake Veterans Affairs Health Care system** Graduate Research Assistant (Intern)
Salt Lake City, UT, USA May 2015 - August 2015
- Exploring temporal changes in MIMIC II healthcare dataset through visualization tools.

- CCS-7, Los Alamos National Laboratory** Graduate Research Assistant (Intern)
Los Alamos, NM, USA May 2014 - August 2014
- In-situ visualization & analysis of plasma surface interaction (PSI) simulations using VTK.
- CCS-7, Los Alamos National Laboratory** Graduate Research Assistant (Intern)
Los Alamos, NM, USA May 2013 - August 2013
- Dendrogram-based data-parallel halo finding algorithm to find haloes & stats for a range of linking lengths.
- CCS-7, Los Alamos National Laboratory** Graduate Research Assistant (Intern)
Los Alamos, NM, USA May 2012 - August 2012
- Kd-tree-based data-parallel halo finding algorithm to compute haloes for one linking length.
- London School of Marketing - Sri Lanka** Freelance Graphic Designer
Colombo, Sri Lanka August 2008 - August 2009
- Handled company's graphic designing work using Adobe Photoshop & Adobe Illustrator.
- Virtusa Corporation** Associate Software Engineer (Intern)
Colombo, Sri Lanka February 2008 - August 2008
- Implemented a Microsoft SharePoint-based Online Examination Tool.
 - A Microsoft SharePoint-based Deal Review Portal to manage company business deals.
- IExpolink International (Pvt) Ltd,** Computer Graphics Instructor
Kohuwala, Sri Lanka February 2007 - April 2008
- Conducted computer graphics classes for the high school children involving packages such as Adobe Photoshop, Adobe Illustrator & CorelDraw.

Publications

- A Flexible Framework for Visualizing and Exploring Patient Misdiagnosis over Time**, W. N. Widanagamaachchi, K. Peterson, A. B. Chapman, D. Classen and M. M. Jones., *In Journal of Biomedical Informatics*, Volume 134, 2022, Page 104178.
(*Honorable mention in Dr. James Cimino's Annual Year in Review at AMIA 2022*)
- Predicting Misdiagnoses of Infectious Disease in Emergency Department Visits**, A. B. Chapman, K. Peterson, W. N. Widanagamaachchi and M. M. Jones. *In Open Forum Infectious Diseases*, Volume 8, Issue *Supplement*₁, November 2021, Page S411.
- Corrigendum and Addendum: Helium Flux Effects on Bubble Growth and Surface Morphology in Plasma-facing Tungsten from Large-scale Molecular Dynamics Simulations (2019 Nucl. Fusion 59 066035)**, K. Hammond, B. Lee, I. Naeger, W. N. Widanagamaachchi, L.-T. Lo, D. Maroudas and B. Wirth., *In Nuclear Fusion*, 2020.
- Helium Flux Effects on Bubble Growth and Surface Morphology in Plasma-facing Tungsten from Large-scale Molecular Dynamics Simulations**, K. Hammond, I. Naeger, W. N. Widanagamaachchi, L.-T. Lo, D. Maroudas and B. Wirth., *In Nuclear Fusion*, 2019.
- Flux Effects on Helium-Induced Surface Evolution in Tungsten**, K. Hammond, I. Naeger, W. N. Widanagamaachchi, L.-T. Lo, D. Maroudas and B. Wirth., *In APS Division of Plasma Physics Meeting*, 2018.
- Interactive Visualization and Exploration of Patient Progression in a Hospital Setting**, W. N. Widanagamaachchi, Y. Livnat, P.-T. Bremer, S. Duvall, and V. Pascucci., *Proceedings of the AMIA 2017 Annual Symposium*, Washington, USA, 2017.
- Exploring the Evolution of Pressure-Perturbations to Understand Atmospheric Phenomena**, W. N. Widanagamaachchi, A. Jacques, B. Wang, E. Crosman, P.-T. Bremer, V. Pascucci. and J. Horel., *Proceedings of 2017 IEEE Pacific Visualization Symposium (PacificVis)*, Seoul, Korea, 2017.
- Tracking Features in Embedded Surfaces: Understanding Extinction in Turbulent Combustion**, W. N. Widanagamaachchi, P. Klacansky, H. Kolla, A. Bhagatwala, J. Chen, V. Pascucci and P.-T. Bremer., *Proceedings of IEEE symposium on Large-Scale Data Analysis and Visualization (LDAV)*, Chicago, USA, 2015.

Visualization and Analysis of Large-Scale Atomistic Simulations of PlasmaSurface Interactions, W. N. Widanagamaachchi K. Hammond, L.-T. Lo, B. Wirth, F. Samsel, C. M. Sewell, J. Ahrens and V. Pascucci., *Proceedings of EuroVis - Short Papers*, Cagliari, Italy, 2015.

Data-Parallel Halo Finding with Variable Linking Lengths, W. N. Widanagamaachchi, P.-T. Bremer, C. M. Sewell, L.-T. Lo, J. Ahrens and V. Pascucci., *Proceedings of IEEE symposium on Large-Scale Data Analysis and Visualization (LDAV)*, Paris, France, 2014.

A Flexible Framework for Space and Time Exploring Panoramas Using Ray Graphs, W. N. Widanagamaachchi, P. Rosen and V. Pascucci., *Proceedings of XXVI SIBGRAPI Conference on Graphics, Patterns, and Images*, Arequipa, Peru, 2013. (**Awarded Best Paper**)

Interactive Exploration of Large-Scale Time-Varying Data using Dynamic Tracking Graphs, W. N. Widanagamaachchi C. Christensen, P.-T. Bremer and V. Pascucci, *Proceedings of IEEE symposium on Large-Scale Data Analysis and Visualization (LDAV)*, Seattle, USA, 2012. (**Nominated for Best Paper**)

Emotion Recognition with Image Processing and Neural Networks, W. N. Widanagamaachchi and A. T. Dharmaratne, *Proceedings of 27th National Information Technology Conference (NITC)*, Colombo, Sri Lanka, 2009.

3D Face Reconstruction from 2D Images - A Survey, W. N. Widanagamaachchi and A. T. Dharmaratne, *Proceedings of IEEE Digital Image Computing: Techniques and Applications Conference (DICTA)*, Canberra, Australia, 2008.

Presentations

Demographic Characteristics of Veterans with COVID-19 by Wave, W. N. Widanagamaachchi A.R. Callahan, C. D. Dalton, T. M. Willson, M. M. Jones, M. Plomondon, T. Box, J. Francis., *HSR&D/QUERI National Conference*, Baltimore, USA, 2023. (**Accepted**)

Interactive Visualization and Exploration of Patient Progression in a Hospital Setting, W. N. Widanagamaachchi Y. Livnat, P.-T. Bremer, S. Duvall and V. Pascucci., *Proceedings of 2016 Workshop on Visual Analytics in Healthcare*, Chicago, USA, 2016.

Understanding Feature Evolution Over Time For Large-scale Time-varying Datasets, W. N. Widanagamaachchi and V. Pascucci, *Doctoral Colloquium, VisWeek*, 2015.

Posters

Predicting Misdiagnoses of Infectious Disease in Emergency Department Visits, A. B. Chapman, K. Peterson, W. N. Widanagamaachchi and M. M. Jones. *In ID Week*, USA, 2021.

VisContest: Interactive Topological Exploration of Particle Ensembles, H. Bhatia, P. Klacansky, S. Liu, W. N. Widanagamaachchi, A. Gyulassy, V. Pascucci and P.-T. Bremer, *In Scientific Visualization Contest at IEEE Vis*, Baltimore, USA, 2016.

Interactive Visualization and Exploration of Tracking Graphs for Understanding Evolution of Features, W. N. Widanagamaachchi and V. Pascucci, *In annual research showcase of SCI Institute*, Salt Lake City, USA, 2016.

Interactive Topological Exploration of Particle Ensembles, H. Bhatia, P. Klacansky, S. Liu, W. N. Widanagamaachchi, A. Gyulassy, V. Pascucci and P.-T. Bremer, *In annual research showcase of SCI Institute*, Salt Lake City, USA, 2016.

Feature-Based Analysis of Large-Scale Data using Limited Resources and Interactive Techniques for Exploration, W. N. Widanagamaachchi, S. Liu, C. Christensen, J. Bennett, A. Gyulassy, P.-T. Bremer and V. Pascucci, *In annual research showcase of SCI Institute*, Salt Lake City, USA, 2012.

Professional Services

Reviewer for Applied Clinical Informatics (ACI) Journal 2023, ICTer Journal 2022, Computer Graphics International (CGI) 2015, Graphics Interface (GI) 2013, IEEE Visualization 2012 and SIGGRAPH 2012.

References

Available upon request.