VISHWAJEET PATTANAIK

vishwajeetp@iisc.ac.in | https://vpattanaik.github.io/

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ResearchGate · LinkedIn · GitHub

EXPERIENCE

November 2022 – Present
SPECIALIST SCIENTIST. **Centre for infrastructure, Sustainable Transportation & Urban Planning, IISc Bangalore (India)**
Research Area: Artificial Intelligence, Collective Behaviour, Data Mining, Transportation, Image Processing, Machine Learning.

October 2021 – December 2023
ENGINEER (RESEARCH). **Centre for Environmental Sensing and Intelligence,**
Tallinn University of Technology (Estonia)
Research Area: Artificial Intelligence, Collective Behaviour, Data Mining, Environmental Technology, Image Processing, Machine Learning.

October 2021 – December 2022
EXTERNAL SCHOLAR. **Collective Intelligence Research Group,**
IT University of Copenhagen (Denmark)
Research Area: Collective Intelligence, Collective Behaviour, Citizen Science.

February 2017 – September 2021
EARLY-STAGE RESEARCHER. **Information Systems Group,**
Tallinn University of Technology (Estonia)
Research Area: Collective Intelligence, Human-Computer Interaction, Web Information Systems.
Other Responsibilities: Supervised master's theses, worked as a Teaching Assistant for master's courses, and contributed to research projects as Research Staff.

July 2014 – January 2017
ASSISTANT PROFESSOR. **Krishna Engineering College (India)**
Courses: Data Structures using C, Graph Theory, Theory of Automata & Formal Language, Knowledge-Based Decision Support System, Cyber Security, and Web Technologies.
Other Responsibilities: Supervised bachelor's and master's theses, was System Admin for the institute's Student-Employee Portals, Employee Biometric Systems, and Moodle.

May 2016 – July 2016
RESEARCH FELLOW. **Indian Institute of Technology (India)**
Research Area: Medical Image Processing and Machine Learning.

January 2013 – April 2014
GRADUATE TEACHING ASSISTANT. **SRM University (India)**
Courses: Programming in C\C++\Java\NS2, Development of Applications in C#, and Artificial Intelligence & Expert Systems.

January 2011 – July 2011
TECHNICAL SPECIALIST. iYogi Technical Services (India)
Level 2 Voice Technical Specialist – *Dell on Call* Process.

March 2010 – September 2010
TECHNICAL TRAINER, NIIT Career Development Centre (India)
Courses: C, C++, Java Programming.

EDUCATION

2017 – 2022
DOCTOR OF PHILOSOPHY (PH.D.), Tallinn University of Technology (Estonia)
Computer Science
Thesis: *'Robust Web Annotations in Support of Knowledge Co-Creation'*

2012 – 2014
MASTER OF TECHNOLOGY (M.TECH.), SRM University (India)
Knowledge Engineering – Computer Science Engineering
Thesis: *'Pivotal Kinematic Prediction for Autonomous Robots using ARIMA'*

2007 – 2011
BACHELOR OF TECHNOLOGY (B.TECH.), Uttar Pradesh Technical University (India)
Computer Science Engineering
Thesis: *'Autorun Batch File to Establish Network File Sharing for University'*

RESEARCH PROJECTS

- [Public Sector (non-Estonian) Project] LIAAV21092, *'Software development for the automatic identification of fish in underwater videos from fishways'*
Description: *Developing, testing, and validating a fully automated AI fish counting system of 20+ freshwater fish species using more than 23 Mio. videos with fish, fish swarms and changing environmental conditions.*
Duration: *1st April' 2021 – Ongoing*

Designation: *Lead Researcher*

- [HITSA IT Akadeemia] EITSA20017, *'Implementation of ICT-based technical solutions for the speciality-specific courses of the Waterway Safety Management study programme'*
Description: *The aim of the project is to update and modernize the specialty-specific courses of the Waterway Safety Management study program by implementing ICT-based technical solutions and ICT-related knowledge and skills in order to bring the study program into compliance with the standards of the International Hydrographic Organization.*
Duration: *1st April' 2020 – 31st July' 2021*

Designation: *Teaching Assistant*

- [Smart Specialisation Project] LEP19022, *'Applied research for creating a cost-effective interchangeable 3D spatial data infrastructure with survey-grade accuracy'*
Description: *The current research main target is to impact the whole spatial data management process by producing the next level 3D spatial base data layer and integrating it with widely used*

existing spatial databases. To be able to look the process as a whole the research will include the full process of the spatial data management - from the data generation to the spatial data infrastructure platform. One of the key elements is to understand the effect of implementing AI based automated information detection in every process to reduce costs and maximize efficiency and therefore reduce the time spent on data generation process.
Duration: *1st April' 2019 – 31st March' 2021*

Designation: ***Research Staff***

OTHER PROJECTS

- ***Smart real-time traffic congestion estimation and clustering technique for urban vehicular roads*** (2017) [*Source*].
- ***Low Complexity – Interactive 3D Volume Extraction and Analysis of Vascular System from 2D – TOF (Time of Flight) Nonenhanced Magnetic Resonance Angiography*** (2016).
- ***Weather - Temperature Pattern Prediction and Anomaly Identification using Artificial Neural Network*** (2016) [*Source*].
- ***ICACDS-2016*** Website (2016).
- ***Pivotal Kinematic Prediction for Autonomous Robots using ARIMA*** (2014) [*Source*].
Designed in MATLAB, the project suggests a novel way for robotic motion.
- ***Autorun Batch File to Establish Network File Sharing for University*** (2011).
C program designed to generate an autorun batch file, to establish network file sharing for a university.
- ***Learning Chemistry*** (2010).
C# application to help 6th - 9th class students learn chemistry, using GUIs including virtual books, crossword games & MCQs.

SUPERVISED THESES

- ***Contact Tracing Applications and the Challenge of Offering Public Services Through Platforms Designed via. Public-Private Collaboration for Public Value***. 2021. Julius Lwanga. TalTech (Estonia) [Master's Thesis]
- ***Framework for P2P Data Sharing over Web Browsers***. 2018. Ioane Sharvadze. TalTech-UT (Estonia) [Master's Thesis]
- ***Image Processing based Automated Attendance System & Concentration Analysis System***. 2016. KEC (India) [Bachelor's Thesis]
- ***Image Processing based Gesture Control System***. 2016. KEC (India) [Bachelor's Thesis]
- ***Text- & Audio-based Emotional Chatbot using NLP and GMM***. 2016. KEC (India) [Bachelor's Thesis]
- ***Bluetooth Controlled Arduino RC Car***. 2016. KEC (India) [Bachelor's Thesis]

VERIFIED REVIEWS

- IEEE Access
- International Journal of Urban Sciences (Taylor & Francis)
- Data & Policy (Cambridge University Press)

INVITED TALKS

- Guest Talk on '*Emerging Fields in Machine Learning and Robotics*' at Institute of Innovation in Technology and Management, Guru Gobind Singh Indraprastha University, Delhi, India. 2021.

- Lightning Talk on '*Leveraging the Power of the Crowd to Save the Web*' at the Decentralised Web Symposium, WU, Austria. 2020.
- Guest Talk on '*Enabling Social Information Exchange via Dynamically Robust Annotations*' at Institute for Information Business, Vienna University of Economics and Business, WU, Austria. 2019.

SEMINARS & WORKSHOPS

- Presented ongoing research and attended 24th *Estonian Winter Schools in Computer Science* (EWSCS' 2019) and 17th – 18th *Estonian Summer School on Computer and Systems Science* (ESSCaSS' 2018, ESSCaSS' 2019), Estonia.
- Attended Workshop on '*Exploring Pathways to promote Entrepreneurship Through Incubation & Innovation*', organized by Technology Business Incubator - KIET Group of Institutes and Govt. of India (NSTEDB, DST, Ministry of MSME, Small Industries Development Bank of India), India. 24 Jan' 2016 to 25 Jan' 2016.
- Attended Faculty Development Program on '*Significance of Accreditation & Entrepreneurship Awareness*', organized by Krishna Engineering College, Ghaziabad, India. 2015.
- Attended Short Term Training Program on '*Two Week ISTE STTP Workshop on Introduction to Design of Algorithms*', organized under MHRD NMEICT at Krishna Institute of Engineering and Technology, Ghaziabad, India. 25 May' 2015 to 30 May' 2015.
- Assisted in Faculty Development Program on '*Hands on Training for MATLAB & its Application*', organized by SRM University, India. 2014.
- Attended workshop on '*Architectural Thinking for Software Engineers*' on 4 Mar' 2013 & 5 Mar' 2013, organized by SRM University, India. 2014.
- Participated in National Seminar on '*Computation Intelligence*' on 21 Jan' 2013 & 22 Jan' 2013, organized by SRM University, India. 2013.
- Attended Faculty Development Program on '*Next Generation Intelligent Optical Network*' by Dr. Biswanath Mukhrejee, University of California Davis on 25 Jun' 2012 – 29 Jun' 2012, organized by SRM University, India. 2012.

CERTIFICATES & ACHIEVEMENTS

- Won *Gold Medal* on *Research Day*. Paper titled '*Pivotal Kinematic Prediction for Autonomous Robots using Moving Average Smoothing*'. SRM University, India (2014).
- *Qualified GATE 2011* (Computer Science) with *93.5 Percentile*. *All India Rank 8832* (2011).
- *NETTECH Certified* in *Network Management* (2010).
- *NIIT Certified* in *Development of Enterprise Applications Using VC#.Net* (2008) and *Java Programming Language* (2008).

TECHNICAL SKILLS

- *Programming Languages*: C/C++, Java, HTML, CSS, JavaScript, XML, MySQL, PHP, C#.Net, MATLAB, Python, R.
- *Programming Tools*: Turbo C++ IDE, Net Beans IDE, Visual Studio, MATLAB, PyCharm, RStudio.
- *Other Tools*: Blender, Adobe After Effects, Meshroom, Kdenlive, Inkscape, Kinovea.

RESEARCH INTERESTS

Web Development. Knowledge Engineering. Collective Intelligence. Collective Behaviour. Computational Intelligence. Computational Cognitive Science. Machine Learning. Neural Networks and Artificial Intelligence. Applied Artificial Intelligence. Cognitive Science and Artificial Thinking.

Digital Image Processing. Probability Theory. Decision Science. Game Theory.

PUBLICATIONS

- **[Working Draft]** Soom J., Leier M., Pattanaik V., and Tuhtan J. A. 2022. Environmentally adaptive underwater video fish detection and classification using a high-performance desktop and edge computing hardware.

- **[In Press]** Suran S., Pattanaik V., Kurvers R. H. J. M., Hallin C. A., Liddo A. D., Krimmer R., and Draheim D. 2022. Building Global Societies on Collective Intelligence: Challenges and Opportunities. ACM Digital Government: Research and Practice.

- **[C.10]** Peious S. A., Suran S., Pattanaik V., and Draheim D. 2021. Enabling sensemaking and trust in communities: an organizational perspective. In Proceedings of the 23rd International Conference on Information Integration and Web-based Applications & Services (iiWAS' 21). ACM. https://doi.org/10.1145/3487664.3487678

- **[J.3]** Dwivedi V., Pattanaik V., Deval V., Dixit A., Norta A., and Draheim D. 2021. Legally Enforceable Smart-Contract Languages: A Systematic Literature Review. ACM Computing Surveys. https://doi.org/10.1145/3453475

- **[C.9]** Suran S., Pattanaik V., and Draheim D. 2020. CommunityCare: Tackling Mental Health Issues With The Help Of Community. In Proceedings of the 22nd International Conference on Information Integration and Web-based Applications & Services (iiWAS' 20). ACM. https://doi.org/10.1145/3428757.3429114

- **[J.2]** Pattanaik V., Sharvadze I., and Draheim D. 2020. A Peer-to-Peer Data Sharing Framework for Web Browsers: Analysis and Evaluation. SN Computer Science, Springer. https://doi.org/10.1007/s42979-020-00236-6

- **[J.1]** Suran S., Pattanaik V., and Draheim D. 2020. Frameworks for Collective Intelligence: A Systematic Literature Review. ACM Computing Surveys. https://doi.org/10.1145/3368986

- **[C.8]** Pattanaik V., Suran S., and Draheim D. 2019. Enabling Social Information Exchange via Dynamically Robust Annotations. In Proceedings of the 21st International Conference on Information Integration and Web-based Applications & Services (iiWAS' 19). ACM. https://doi.org/10.1145/3366030.3366060

- **[C.7]** Pattanaik V., Sharvadze I., and Draheim D. 2019. Framework for Peer-to-Peer Data Sharing over Web Browsers. In Proceedings of the 6th International Conference on Future Data and Security Engineering (FDSE' 19). LNCS, Springer. https://doi.org/10.1007/978-3-030-35653-8_14

- **[C.6]** Suran S., Pattanaik V., Yahia S.B., and Draheim D. 2019. Exploratory Analysis of Collective Intelligence Projects Developed Within the EU-Horizon 2020 Framework. In Proceedings of the 11th International Conference on Computational Collective Intelligence (ICCCI' 19). LNCS, Springer. https://doi.org/10.1007/978-3-030-28374-2_25

- **[C.5]** Pattanaik V., Norta A., Felderer M., and Draheim D. 2018. Systematic Support for Full Knowledge Management Lifecycle by Advanced Semantic Annotation Across Information System Boundaries. In Proceedings of the Information Systems in the Big Data Era (CAiSE' 18). LNBIP, Springer. https://doi.org/10.1007/978-3-319-92901-9_7

- **[I.3]** Suran S., Pattanaik V., Singh M., Gupta P.K., and Gupta P. 2017. Brain Imaging Procedures

and Surgery Techniques: Past, Present and Future. International Journal of Bio-Science and Bio-Technology. https://doi.org/10.14257/ijbsbt.2017.9.3.03

- *[C.4]* Gupta A., Pattanaik V., and Singh M. 2017. Enhancing K means by unsupervised learning using PSO algorithm. In Proceedings of the International Conference on Computing, Communication and Automation (ICCCA' 17). IEEE. https://doi.org/10.1109/CCAA.2017.8229805

- *[C.3]* Pattanaik V., Singh M., Gupta P. K., and Singh S. K. 2016. Smart real-time traffic congestion estimation and clustering technique for urban vehicular roads. In Proceedings of the IEEE Region 10 Conference (TENCON' 16). IEEE. https://doi.org/10.1109/TENCON.2016.7848689

- *[I.2]* Tyagi H., Suran S., and Pattanaik V. 2016. Weather - Temperature Pattern Prediction and Anomaly Identification using Artificial Neural Network. International Journal of Computer Applications. Foundation of Computer Science (FCS). https://doi.org/10.5120/ijca2016909252

- *[I.1]* Gupta A. and Pattanaik V. 2016. Survey Paper on Encryption, Authentication and Auditing Services for better Cloud Security. International Journal of Computer Applications. Foundation of Computer Science (FCS). https://doi.org/10.5120/ijca2016908978

- *[C.2]* Suran S., Pattanaik V., and Malathi D. 2014. Discovering Shortest Path between Points in Cerebrovascular System. In Proceedings of the 6th IBM Collaborative Academia Research Exchange Conference (I-CARE' 14). ACM. https://doi.org/10.1145/2662117.2662122

- *[C.1]* Pattanaik V., Suran S., and Prabakaran S. 2014. Inducing Human-like Motion in Robots. In Proceedings of the 6th IBM Collaborative Academia Research Exchange Conference (I-CARE' 14). ACM. https://doi.org/10.1145/2662117.2662118

Declaration: I hereby declare that all the above-mentioned information is true to the best of my knowledge, and I bear the responsibility for its correctness.

VISHWAJEET PATTANAIK