Sreevalsan S Menon

✉ sm2hm@mst.edu, sreevalsansmenon@gmail.com
🌐 https://sreevalsansmenon.com/
in https://www.linkedin.com/in/sreevalsansmenon/

Research Highlights

🔖 **Static and dynamic functional connectivity of the human brain.** Using resting-state fMRI data from the Human Connectome Project (HCP), intrinsic individual connectivity patterns of healthy adults were explored utilizing static and dynamic connectivity measures. Results show that the intrinsic individual brain connectivity pattern can be used as a 'fingerprint' to distinguish among and identify subjects and is more accurately captured with partial correlation and assuming static functional connectivity. It was also seen that the intrinsic individual brain connectivity patterns were invariant over a few months.

🔖 **Neuronal and functional complexities of the human brain.** Using resting-state fMRI data from the HCP, neuronal and functional complexities were estimated by using multiscale entropy of BOLD signals and BOLD phase coherence connectivity, respectively, at various levels of the brain's organization. The complexity study revealed the advantage of functional complexity over neuronal complexity in predicting fluid intelligence.

🔖 **Neural activation patterns in children living in high crime neighborhoods.** This study examined the neural activation patterns in children who reported living in either high or low crime neighborhoods using monetary incentive delay task fMRI data from the Adolescent Brain Cognitive Development (ABCD) Study. Participants living in unsafe neighborhoods showed reduced activation in several regions in the brain that are part of the reward circuit. Further, the brain activities in high-resilient participants living in unsafe neighborhoods have a pattern closer to control participants (safe neighborhood) as compared to low-resilient participants living in unsafe neighborhoods.

🔖 **Ensemble deep learning for prediction of disruptive behavior disorder (DBD) in children.** Multimodal information from resting-state fMRI, diffusion tensor imaging, and structural imaging were used to predict DBD in children. The ABCD Study data was used with a 3D convolutional neural network to predict DBD and the results show that the ensemble learning improves prediction accuracy compared to individual modality prediction models.

Employment History

2018 – present	🔖	**Graduate Teaching Assistant,** Missouri University of Science and Technology Instructor for controls systems laboratoy and mechatronics
2017 – 2020	🔖	**Graduate Research Assistant,** Missouri University of Science and Technology
2015 – 2016	🔖	**Graduate Research Assistant,** Precision Instrumentation Laboratory, Indian Space Research Organization Inertial Systems Unit, India

Education

2017 – 2021   🔖 **Ph.D., Missouri University of Science and Technology** in Mechanical Engineering
Thesis title: *Identification of Neuromarkers in Health and Disease Using Intrinsic Individual Neuronal Activities in the Human Brain*
GPA: 4.0/4.0

2014 – 2016   🔖 **M.Tech. Computer Integrated Manufacturing., University of Calicut** in Mechanical Engineering
Thesis title: *Robotic Micro Abrasive Jet Machining for Recast Layer Removal.*
GPA: 8.9/10 (equivalent to 3.9 out of 4.0)

2010 – 2014   🔖 **B.Tech. with Honours, University of Calicut** in Mechanical Engineering
GPA: 8.2/10 (equivalent to 3.7 out of 4.0)

Research Publications

Journal Articles

(1) **Menon, S. S.**, & Krishnamurthy, K. (2019a). A comparison of static and dynamic functional connectivities for identifying subjects and biological sex using intrinsic individual brain connectivity. *Scientific reports*, *9*(1), 1–11. 🔗 `https://doi.org/10.1038/s41598-019-42090-4`

(2) **Menon, S. S.**, & Krishnamurthy, K. (2019b). A study of brain neuronal and functional complexities estimated using multiscale entropy in healthy young adults. *Entropy*, *21*(10), 995. 🔗 `https://doi.org/10.3390/e21100995`

(3) Antony, F., Albert, P., Rimin, P., Disney, R., Sooraj, M., & **Menon, S. S.** (2014). Design and development of pneumatic hybrid vehicle (phv). *International Journal of Innovative Research in Science, Engineering and Technology*, *3*(6), 13184–13191. 🔗 `https://doi.org/10.5281/zenodo.3478671`

(4) **Menon, S. S.**, Sooraj, M., Mohan, S., Disney, R., & Sukumaran, S. (2013). Design and analysis of kinetic energy recovery system in bicycles. *International Journal of Innovative Research in Science, Engineering and Technology*, *2*(8), 2319–8753. 🔗 `https://doi.org/10.5281/zenodo.3476891`

Conference Proceedings

(1) **Menon, S. S.**, & Kumar, S. (2017). Surface integrity improvement of edm components by robotic micro abrasive jet machining, In *Ktu-kerala technological congress 2017 (ketcon 2017)*. 🔗 `https://doi.org/10.5281/zenodo.3478673`

(2) **Menon, S. S.**, & Kumar, S. (2016). Robotic micro abrasive jet machining for recast layer removal, In *National level pg research conference on emerging trends in manufacturing (factura-2k16)*.

Work in Progress

(1) **Menon, S. S.**, & Krishnamurthy, K. (n.d.). *Ensemble learning with 3d convolutional neural networks for prediction of disruptive behavior disorders in children.*

(2) **Menon, S. S.**, Krishnamurthy, K., & Paul, R. H. (n.d.). *Resilience to adversity in children living in unsafe neighborhoods.*

Skills

Coding	◼	MATLAB, Python, R, LaTeX, Shell script, C (basic-read), C++ (basic-read), Markup Language (basic)
Databases	◼	MySQL
Neuroimaging	◼	FSL, AFNI, SPM, FieldTrip.
Modelling	◼	AutoCAD, Solid Edge, Pro-E, Creo 2.0, and RobotStudio
Scientific Application	◼	SAS, JMP, LINDO, LINGO, Ansys, Minitab
Control Hardware	◼	ABB Robot, Arduino, Quanser, Directsoft PLC, NI myDAQ

Awards and Achievements

◼ **Best Paper Award**, Best paper award received for Kerala Technological Congress (KETCON) presentation.

◼ **Certificate of Excellence**, Certificate of Excellence by University of Calicut for outstanding student.

◼ **GATE**, Qualified Graduate Aptitude Test in Engineering.

Certification

◼ **IBM AI Engineering Specialization**. IBM

◼ **MATLAB Programming for Engineers and Scientists Specialization**. Vanderbilt University

◼ **Principles of fMRI**. Johns Hopkins University

◼ **Fundamental Neuroscience for Neuroimaging**. Johns Hopkins University

◼ **Mathematics for Machine Learning Specialization**. Imperial College London

◼ **Deep Learning Specialization**. deeplearning.ai

◼ **Data Science: Foundations using R Specialization**. Johns Hopkins University

◼ **Machine Learning**. Stanford University

◼ **Excel Skills for Business Specialization**. Macquarie University

◼ **CREO for Designers**. PTC University

References

Dr. K. Krishnamurthy
Professor
Missouri University of Science and Technology,
Rolla, MO
573-341-4495
    kkrishna@mst.edu

Dr. Jagannathan Sarangapani
Professor
Missouri University of Science and Technology,
Rolla, MO
573-341-6775
    sarangap@mst.edu

Dr. Jacob Bolzenius
Lead Scientist
Missouri Institute of Mental Health,
University of Missouri-St. Louis,
St. Louis, MO
314-516-8465
    bolzeniusj@umsl.edu