

Curriculum vitae

PERSONAL INFORMATION



Satish Kumar Panda

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WORK EXPERIENCE

- 01/2022-Present **Assistant Professor, Mechanical Engineering, IIT Guwahati**
Research: Artificial Intelligence in Healthcare, Medical Image Processing, Diagnosis, Ophthalmology, Biomechanics, and Finite Element Analysis
- 02/2021-Present **Co-founder & CTO, Hybrique Pvt Ltd, Singapore**
A start up for application of AI in design and development, Funded by NUS, Singapore
- 06/2020-01/2022 **Researcher, Singapore Eye Research Institute, Singapore**
Project: Artificial intelligence and biomechanics for glaucoma
- 10/2018-01/2022 **Postdoctoral Fellow (Department of Biomedical Engineering)**
Research Scholarship Block funding for a period of three years.
National University of Singapore (NUS), Singapore
Project: Artificial intelligence for disease diagnosis
- 06/2013–12/2014 **Manager, R&D (Testing)**
Bajaj Auto Ltd., India
- 07/2009–06/2011 **Assistant Manager, R&D (Design)**
TATA-HITACHI Construction Machinery Pvt Ltd., India.

EDUCATION

- 01/2015–8/2018 **PhD (Department of Biomedical Engineering)**
National University of Singapore (NUS), Singapore
(President's Graduate Fellowship)
Final grade (CGPA): **4.9/5.0**

- 09/2011-04/2012 **Master Thesis (Department of Numerical Methods in Mechanical Engineering)**
Technische Universitat Darmstadt (TUD) Darmstadt, Germany.
(DAAD Fellowship) Project sponsor: General Motors
- 07/2011-05/2013 **Master of Technology (Department of Applied Mechanics)**
Indian Institute of Technology Delhi (IIT), New Delhi, India.
Final grade (CGPA): **9.75/10.0**
- 07/2005-05/2009 **Bachelor of Engineering (Department of Mechanical Engineering)**
National Institute of Technology (NIT), Durgapur, India.
Final grade (CGPA): **8.55/10.0**

PUBLICATIONS/PROJECTS

Publications **International journal:**

1. **Panda S K**, Cheong H, Tun T A, Chuangsuwanich T et al., The Three-Dimensional Structural Configuration of the Central Retinal Vessel Trunk and Branches as a Glaucoma Biomarker, American journal of ophthalmology, preprint, 2022.
2. **Panda S K**, Cheong H, TA Tun et al., Describing the structural phenotype of the glaucomatous optic nerve head using artificial intelligence, American journal of ophthalmology 236, 172-182, 2022.
3. **Panda S K**, Tan R K, Tun T A, and Girard M J, Changes in Iris Stiffness and Permeability in Primary Angle Closure Glaucoma, Investigative ophthalmology & visual science, 62(13), 29-2, 2021.
4. Devalla S K, Pham T H, **Panda S K** et al., Towards Label-Free 3D Segmentation of Optical Coherence Tomography Images of the Optic Nerve Head Using Deep Learning, Biomedical Optic Express 11 (11), 6356-6378, 2020.
5. **Panda S K** and Buist M L. A viscoelastic framework for inflation testing of gastrointestinal tissue, Journal of the mechanical behavior of biomedical materials 103, 103569, 2020.
6. **Panda S K** and Buist M L. A finite element approach for gastrointestinal tissue mechanics, International journal for numerical methods in biomedical engineering 35(12), e3269, 2019.
7. **Panda S K** and Buist M L. A finite nonlinear hyper-viscoelastic model for soft biological tissues, Journal of biomechanics 69, 121-128, 2018.

Under Review:

8. Girard MJA, **Panda SK**, Tun TA et al., 3D Structural Analysis of the Optic Nerve Head to Robustly Discriminate Between Papilledema and Optic Disc Drusen, arXiv

preprint arXiv:2112.09970, 2022.

9. Chuangsuwanich T, Tun TA, Wang X, Chin ZY, **Panda SK** et al., Differing Associations between Optic Nerve Head Strains and Visual Field Loss in Normal-and High-Tension Glaucoma Subjects, bioRxiv, 2022.
10. Chuangsuwanich T, Tun TA, Wang X, Chin ZY, **Panda SK** et al., Adduction Induces Large Optic Nerve Head Deformations in Subjects with Normal Tension Glaucoma, bioRxiv, 2022.
11. **Panda**, S K, and M L Buist. An active finite viscoelastic model for gastric smooth muscle contraction, bioRxiv, <https://doi.org/10.1101/2021.01.26.428273>

International/National conferences:

12. **Panda S K**, Tun TA, Perera S, Cheng CY, Aung T, Thiéry A, and Girard MJA, Use of Artificial Intelligence to Describe the Structural Signature of the Glaucomatous Optic Nerve Head, Investigative Ophthalmology & Visual Science 62 (8), 1030-1030, 2021.
13. Cheong H, **Panda S K**, Aung T, and Girard MJA, Image Restoration Algorithms for OCT Images of the Optic Nerve Head: Performance comparison between OCT-GAN and Compensation, Investigative Ophthalmology & Visual Science, 62 (8), 1787-1787, 2021.
14. **S K Panda**, S K Devalla, M E Nongpiur, M Baskaran, A H. Thiéry, M J. A. Girard, From Segmentation to Diagnosis: Artificial Intelligence to Diagnose Glaucoma using Optic Nerve Head Parameters Extracted from Automated Segmentation of Optical Coherence Tomography Images. Asia-Pacific Ocular Imaging Society Meeting. 17-19 January 2020. Singapore.
15. **Panda, S K**, Tin A, Baskaran M , and Girard M J A. "An Inverse Finite Element Method to Measure In-Vivo Biomechanical Properties of Human Iris" In proceeding of The International Conference of Biomedical Engineering (ICBME 2019), 9-12 December 2019, Singapore
16. **Panda, S K** and M L Buist. "Electromechanics of Gastrointestinal Smooth Muscle" In proceeding of The International Conference of Biomedical Engineering (ICBME 2019), 9-12 December 2019, Singapore
17. **Panda, S K** and M L Buist. "Role of residual stresses in gastrointestinal wall" In Biomedical Engineering Society 11th Scientific Meet, 20 May 2017, Singapore.
18. **Panda, S K** and M L Buist. "Soft biological tissue characterization in health and disease" In proceeding of The International Conference of Biomedical Engineering (ICBME 2016), 7-10 December 2016, Singapore.
19. Zi, F H, Y Li, **S K Panda**, and M L Buist. " A threshold based approach to atherosclerotic plaque growth" In proceeding of The International Conference of

Biomedical Engineering (ICBME 2016), 7-10 December 2016, Singapore.

20. **Panda, S K** and M L Buist. "A Finite Nonlinear Viscoelastic Model for Soft Tissues"
In Biomedical Engineering Society 10th Scientific Meet, 14 May 2016, Singapore.

OTHER SKILLS

Computer skills CAD: - CATIA, AutoCAD, VariCAD, IDEAS, UniGraphics, Solidworks.

CAE: - Msc ADAMS, Msc Simdesign, ABAQUS, Hypermesh, Optistruct.

Durability/ Reliability Testing: - RPC Pro, NESSUS.

Data Processing: - nCode Glyph Works, AMIRA

Programming Language: C, C++, MATLAB, Scilab, Python, Keras

Core competencies Finite element analysis, Numerical methods and Optimization, Electrophysiology, Biomechanics, Artificial Intelligence, Deep Learning

- Awards & Recognition**
- 1) **RSB scholarship** for postdoctoral research
 - 2) **President's Graduate Fellowship** for PhD in Singapore.
 - 3) **DAAD Fellowship** for master studies in Germany.
 - 4) Secured 99.4 percentile in Graduate Aptitude Test in Engineering (**GATE**) 2011. **All India rank 535** out of 81175 candidates.
 - 5) Secured **82nd rank** in Odisha State Joint Entrance Examination for Engineering, **JEE 2005**.