

# Yu Liu

*Ph.D. candidate*  
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♀ She/Her/Hers  
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**Summary** My research interests broadly lie in **Computational Intelligence for Medicine**, focusing on imaging computing, signal processing, computational fluid dynamics (CFD) and their application in cardiology, neurology and neuroscience.

**Education**

**The Chinese University of Hong Kong** Hong Kong, China  
*Ph.D. in Medical Sciences* Aug 2022 - Jul 2025  
• GPA: 3.57/4  
• Thesis: Geometric and Hemodynamic Characteristics of Intracranial Atherosclerotic Stenosis: Clinical, Imaging, and Computational Investigations

**Beihang University** Beijing, China  
*M.Phil. in Biomedical Engineering* Sep 2018 - Jun 2021  
• GPA: 3.8/4  
• Postgraduate recommendation  
• Thesis: Hemodynamic Study of Vertebrobasilar Dolichectasia

**Hebei University of Technology** Tianjin, China  
*B.Eng. in Biomedical Engineering* Sep 2014 - Jun 2018  
• GPA: 3.71/4  
• Honor Graduate with Distinction (Department Rank: 1/41)  
• Thesis: Non-contact Heart Rate Detection Based on Photoplethysmographic Imaging (**Best thesis award, 5%**)

**Experience**

**Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences** Shenzhen, China  
*Visiting Student* Sep 2023 - Nov 2023  
• Laboratory for Engineering and Scientific Computing  
• Institute of Advanced Computing and Digital Engineering  
• Cooperation Project: The pathogenic and recurrent mechanisms of symptomatic intracranial atherosclerotic stroke (sICAS): an interdisciplinary study based on advanced neuroimaging and computational fluid dynamics (CFD)

**Fosun Aitrox** Shanghai, China  
*Research and Development Engineer* Jun 2021 - May 2022  
• Project: Hemodynamic algorithm for fraction flow reserve computed tomography (FFRct)

**China National Institute of Standardization** Beijing, China  
*Research Intern* Aug 2019 - Oct 2019  
• Project: Standardized and digital management of medical insurance policy

**Funding**

**National Natural Science Foundation of China (NSFC)/ Research Grants Council (RGC) of Hong Kong Joint Research Scheme**, 2021-2023 (Participant)  
• Affiliated institution: Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences/The Chinese University of Hong Kong

**Health and Medical Research Fund (HMRF)**, 2018-2022 (Participant)  
• Affiliated institution: The Chinese University of Hong Kong/Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences

**National Key Research and Development Plan, Ministry of Science and Technology of the**

People's Republic of China, 2020-2023 (Participant)

• Affiliated institution: Sun Yat-sen University/Beihang University

## Publications

## Journal

### 2025

• Enlarged translesional pressure gradient drives recruitment of leptomeningeal collaterals in medically treated patients with symptomatic middle cerebral artery stenosis

Yuying Liu, Xuan Tian, Jill Abrigo, Shuang Li, **Yu Liu**, Linfang Lan, Haipeng Liu, Bonaventure YM Ip, Sze Ho Ma, Karen Ma, Florence SY Fan, Hing Lung Ip, Yannie OY Soo, Howan Leung, Vincent CT Mok, Thomas W Leung, Xinyi Leng<sup>†</sup>

*Cerebrovascular Diseases (Cerebrovasc Dis)*, 2025 (Q3, IF: 1.5)

• Is Invasive Fractional Flow Measurement Accurate in Intracranial Stenosis? A Computational Simulation Study

**Yu Liu**<sup>\*</sup>, Zhengzheng Yan<sup>\*</sup>, Ziqi Li, Yuying Liu, Sze Ho Ma, Bonaventure YM Ip, Thomas W Leung, Jia Liu<sup>†</sup>, Xinyi Leng<sup>†</sup>

*Journal of NeuroInterventional Surgery (JNIS)*, 2025 (Q1, IF: 4.3)

• More severe cerebral small vessel disease associated with poor leptomeningeal collaterals in symptomatic intracranial atherosclerotic stenosis

Yuying Liu, Shuang Li, Xuan Tian, Jill Abrigo, Bonnie YK Lam, Jize Wei, Lina Zheng, **Yu Liu**, Ziqi Li, Tingjun Liang, Bonaventure YM Ip, Thomas W Leung, Xinyi Leng<sup>†</sup>

*Journal of Cerebral Blood Flow & Metabolism (JCBFM)*, 2025 (Q1, IF: 4.5)

• Stroke Mechanisms in Intracranial Atherosclerotic Disease: A Modified Classification System and Clinical Implications

Shuang Li, Xuan Tian, Xueyan Feng, Bonaventure Ip, Hing Lung Ip, Jill Abrigo, Lina Zheng, Yuying Liu, **Yu Liu**, Ziqi Li, Tingjun Liang, Karen KY Ma, Florence SY Fan, Sze Ho Ma, Hui Fang, Bo Song, Yuming Xu, Howan Leung, Yannie OY Soo, Vincent CT Mok, Ka Sing Wong, Xinyi Leng<sup>†</sup>, Thomas WH Leung<sup>†</sup>

*Translational Stroke Research (Transl Stroke Res)*, 2025 (Q1, IF: 4.3)

• Clinical implications of haemodynamics in symptomatic intracranial atherosclerotic stenosis by computational fluid dynamics modelling: a systematic review

**Yu Liu**, Shuang Li, Haipeng Liu, Xuan Tian, Yuying Liu, Ziqi Li, Thomas W Leung, Xinyi Leng<sup>†</sup>

*Stroke and Vascular Neurology (SVN)*, 2025 (Q1, IF: 4.9)

### 2024

• Cerebral hemodynamics and stroke risks in symptomatic intracranial atherosclerotic stenosis with internal versus cortical borderzone infarcts: a computational fluid dynamics study

Shuang Li, Xuan Tian, Bonaventure Ip, Xueyan Feng, Hing Lung Ip, Jill Abrigo, Linfang Lan, Haipeng Liu, Lina Zheng, Yuying Liu, **Yu Liu**, Karen KY Ma, Florence SY Fan, Sze Ho Ma, Hui Fang, Yuming Xu, Alexander Y Lau, Howan Leung, Yannie OY Soo, Vincent CT Mok, Ka Sing Wong, Xinyi Leng<sup>†</sup>, Thomas W Leung<sup>†</sup>

*Journal of Cerebral Blood Flow & Metabolism (JCBFM)*, 2024 (Q1, IF: 4.5)

• Hemodynamic significance of intracranial atherosclerotic disease and ipsilateral imaging markers of cerebral small vessel disease

Lina Zheng, Xuan Tian, Jill Abrigo, Hui Fang, Bonaventure YM Ip, Yuying Liu, Shuang Li, **Yu Liu**, Linfang Lan, Haipeng Liu, Hing Lung Ip, Florence SY Fan, Sze Ho Ma, Karen Ma, Alexander Y Lau, Yannie OY Soo, Howan Leung, Vincent CT Mok, Lawrence KS Wong, Yuming Xu, Liping Liu, Xinyi Leng<sup>†</sup>, Thomas W Leung<sup>†</sup>

*European Stroke Journal (ESJ)*, 2024 (Q1, IF: 4.5)

### 2023

• Effects of abnormal vertebral arteries and the circle of Willis on vertebrobasilar dolichoectasia: a multi-scale simulation study

**Yu Liu**<sup>\*</sup>, Xinmiao Zhang<sup>\*</sup>, Yawei Wang<sup>†</sup>, Wentao Feng, Jing Jing, Zhujun Sun, Bitian Wang,

Yongjun Wang, Yubo Fan<sup>†</sup>  
*Clinical Biomechanics (Clin Biomech)*, 2023 (Q3, IF: 1.4)

## 2022

- Effects of stent shape on focal hemodynamics in intracranial atherosclerotic stenosis: A simulation study with computational fluid dynamics modeling  
Haipeng Liu, **Yu Liu**, Bonaventure Y M Ip, Sze Ho Ma, Jill Abrigo, Yannie O Y Soo, Thomas W Leung, Xinyi Leng<sup>†</sup>  
*Frontiers in Neurology (Front Neurol)*, 2022 (Q3, IF: 2.8)
- Variations of human cerebral and ocular blood flow during exposure to multi-axial accelerations: A mathematical modeling study  
Weipeng Li, Bitian Wang, Yawei Wang<sup>†</sup>, Xiaoyu Liu, Wentao Feng, Tianya Liu, Zhujun Sun, **Yu Liu**, Songyang Liu, Yubo Fan<sup>†</sup>  
*Medical & Biological Engineering & Computing (MBEC)*, 2022 (Q3, IF: 2.6)

## Conference Abstract

- Symptomatic atherosclerotic middle cerebral artery stenosis: associations of proximal arterial geometry with plaque location and focal hemodynamics  
**Yu Liu**, Shuang Li, Xuan Tian, Yuying Liu, Ziqi Li, Tingjun Liang, Haipeng Liu, Bonaventure YM Ip, Hui Fang, Thomas W Leung, Xinyi Leng  
**Poster presentation, European Stroke Organisation Conference (ESOC) 2025**, Helsinki, Finland
- Symptomatic atherosclerotic middle cerebral artery stenosis: associations of proximal arterial geometry with plaque location and focal hemodynamics  
**Yu Liu**, Shuang Li, Xuan Tian, Yuying Liu, Ziqi Li, Tingjun Liang, Haipeng Liu, Bonaventure YM Ip, Hui Fang, Thomas W Leung, Xinyi Leng  
**Poster presentation, European Stroke Organisation Conference (ESOC) 2025**, Helsinki, Finland
- Associations of ICA Bifurcation Geometry, MCA Geometry and Plaque Location in Symptomatic Atherosclerotic MCA Stenosis  
**Yu Liu**, Shuang Li, Linfang Lan, Xuan Tian, Yuying Liu, Ziqi Li, Haipeng Liu, Bonaventure Ym Ip, Thomas Leung, Xinyi Leng  
**Poster presentation, European Stroke Organisation Conference (ESOC) 2024**, Basel, Switzerland
- Association between Adjacent Arterial Geometry and Plaque Features in Symptomatic Atherosclerotic Middle Cerebral Artery Stenosis  
**Yu Liu**, Shuang Li, Xuan Tian, Yuying Liu, Ziqi Li, Haipeng Liu, Bonaventure YM Ip, Thomas W Leung, Xinyi Leng  
**Poster presentation, Asia Pacific Stroke Conference (APSC) 2023**, Hong Kong, China
- Cerebral hemodynamics by computational fluid dynamics modeling in symptomatic intracranial atherosclerotic disease and the clinical relevance: a systematic review  
**Yu Liu**, Shuang Li, Xuan Tian, Yuying Liu, Haipeng Liu, Thomas Leung, Xinyi Leng  
**Poster presentation, European Stroke Organisation Conference (ESOC) 2023**, Munich, Germany

\* indicates equal contribution.

† indicates corresponding authorship.

## Challenge

First prize, National Biomedical Engineering Innovation Design Competition for College Students (**top 10%**)

**Project:** Low-powered and remoted electrocardiogram (ECG) monitoring system

Third prize, iCAN Innovation Contest

**Project:** Intelligent wheelchair based on real-time pose transformation

<b>Honors &amp; Awards</b>	Research postgraduate scholarship, <i>The Chinese University of Hong Kong</i>	2022-2025
	First-class scholarship, <i>Beihang University</i>	2018-2021
	Outstanding graduate, <i>Hebei Province (top 5%)</i>	2018
	Outstanding graduate, <i>Hebei University of Technology</i>	2018
	First-class scholarship, <i>Hebei University of Technology</i>	2017-2018
	Outstanding student leader, <i>Hebei University of Technology</i>	2017
	Outstanding student, <i>Hebei University of Technology</i>	2016

## Skills

**Programming:** Python, MATLAB, C/C++, LATEX, HTML, R  
**Libraries & OS:** OpenCV, CGAL; Linux (Ubuntu), Mac OSX  
**Languages:** Mandarin, English