**YAO, Siyu 姚思羽**

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**EDUCATION**

**INDIANA UNIVERSITY**, Bloomington, IN, US

Department of History and Philosophy of Science and Medicine

*Ph.D., Philosophy of Science*, Sep 2019 – now

*Ph.D. Minor*: Cognitive Science

*M.A., Philosophy of Science*, Sep 2019 – May 2022

**PEKING UNIVERSITY**, Beijing, China

Department of Philosophy and Religious Studies

*M.A., Philosophy of Science*, 2016-2019

**PEKING UNIVERSITY**, Beijing, China

College of Chemistry and Molecular Engineering

*B.Sc., Chemistry*, 2012-2016

**AREAS OF INTERESTS**

* **General philosophy of science**:
  + inference, confirmation, evidence, scientific explanation, and scientific methodology.
* **Philosophy of special sciences**:
  + machine learning, cognitive science, astronomy, and historical sciences.
* **Intellectual history of science**:
  + *Naturphilosophie* in German Idealism and Romanticism.
* **Philosophy**
  + Phenomenology, German Idealism.

**PUBLICATION**

Articles:

**Siyu Yao** and Amit Hagar. 2024. “Searching for Features with Artificial Neural Networks in Science: The Problem of Non-Uniqueness.” *International Studies in the Philosophy of Science*.

Siyu Yao. Forthcoming. “The First Three Minutes: Cosmology, Astrophysics, and Particle Physics.” *Bloomsbury Handbook for the Philosophy of Big History/ The Historical Sciences*.

Siyu Yao. 2023. “Excavation in the Sky: Historical Inference in Astronomy.” *Philosophy of Science,* 1-15. doi:10.1017/psa.2023.22

**Siyu Yao**, Joshua Nunley, and Eduardo J. Izquierdo. 2023. “Go by Its Name: Evolution and Analysis of Conceptual Referential Communication.” *Proceedings of the Artificial Life Conference 2023 (ALIFE 2023)*.

* Partially supported by NSF grant No. 1845322.

Yuan-Bo Cai, **Si-Yu Yao**, Mo Hu, Xiaoyun Liu and Jun-Long Zhang, “Manganese protoporphyrin IX reconstituted myoglobin capable of epoxidation of the C=C bond with Oxone®,” *Inorg. Chem. Front.*, 2016, 3, 1236-1244.

Master Thesis

Siyu Yao. *Schelling’s Critique and Development of Kant’s Theory of Dynamics*. Beijing: Peking University, Jun 2019.

In preparation:

Siyu Yao, “Why is it (still) Difficult to Understand Black-Box Models? Explainable Artificial Intelligence and the Experimenters’ Regress”

Siyu Yao, “From “Hot Jupiter” to Jupiter: What Narratives Contribute to Science aside from a True Story”

Siyu Yao, “Narrative Triangulation, Measurement Clusters, and the Establishment of Cosmochronology”

Li, Dan, Ryan O’Loughlin, and **Siyu Yao**. “A Trip in Plato’s Cave: Explainable Artificial Intelligence Methods and Their Epistemic Challenges”

**ACADEMIC ACTIVITIES**

Peer-Reviewed Conference Presentations

* Society for Philosophy of Science in Practice 10th Biennial Meeting, Columbia, USA, May 2024

“Why is it (still) Difficult to Understand Black-Box Models? Explainable Artificial Intelligence and the Experimenters’ Regress”

* Graduate Conference on the Historical and Philosophical Aspects of Astronomical Events, Department of History and Philosophy of Science and Medicine at Indiana University, Bloomington, USA, April 2024

“Narrative Knowledge from the Migration of the ‘Hot Jupiter’”

* The 2023 Conference on Artificial Life: Ghost in the Machine, Sapporo, Japan, July 2023

“Go by Its Name: Evolution and Analysis of Conceptual Referential Communication”

* Canadian Society for the History and Philosophy of Science Annual Meeting, Toronto, Canada, May 2023 (online attendance)

“Why is it (still) Difficult to Understand Black-Box Models? Explainable Artificial Intelligence and the Experimenters’ Regress”

* Philosophy of Science Association 28th Biennial Meeting, Pittsburgh, USA, November 2022

“Excavation in the Sky: Historical Inference in Astronomy”

* The Future of the Past: Philosophical Issues in the “Historical Sciences”, Online, August 2022

“Excavation in the Sky: Historical Inference in Astronomy and the Concept of Trace”

* Society for Philosophy of Science in Practice 9th Biennial Meeting, Ghent, Belgium, July 2022

“Who Makes the Choice? Artificial Neural Networks in Science and the Non-Uniqueness Problem”, collaborative work with Amit Hagar

* Canadian Society for the History and Philosophy of Science Annual Meeting, Online, May 2022

“Excavation in the Sky: Historical Inference in Astronomy and the Concept of Trace”

Colloquium Presentations

* Norwood Russell Hanson Presentation, Department of History and Philosophy of Science and Medicine, Indiana University, Bloomington, USA, October 2022

“Excavation in the Sky: Historical Inference in Astronomy”

* Graduate Student Conference, Department of Philosophy and History of Ideas, Aarhus University, Aarhus, Denmark, Spring 2018

“Goethe’s *ad hominem* Approach in Natural Philosophy”

Peer-Reviewed Posters

* Philosophy of Science Association 28th Biennial Meeting, Pittsburgh, USA, November 2022

“Explanatory Correlate vs Explanation: Theory, Practice, and Research Program for Consciousness”

* Society for Philosophy of Science in Practice 9th Biennial Meeting, Ghent, Belgium, July 2022

“Dynamic or Mechanistic Explanation? Theory and Practice in the Explanation of Consciousness”

* Philosophy of Science Association 27th Biennial Meeting, online, 2020/2021

“The Concept of Minimal Self-Consciousness in Psychological Disorders”

Cancelled due to Covid-19. Accepted into PSA Virtual Poster Gallery.

**AWARDS AND FELLOWSHIPS**

* Indiana University College of Arts and Sciences Dissertation Completion Fellowship (2024-25)
* Mikal Lynn Sousa Award for Excellence in Graduate Scholarship at Indiana University Bloomington (Spring 2024)
* NSF Travel Grant Award for Philosophy of Science Association 28th Biennial Meeting (Fall 2022)
* Norwood Russell Hanson Prize for Outstanding Graduate Student Papers, Department of History and Philosophy of Science and Medicine, Indiana University Bloomington (2022-2023)
* Indiana University College of Arts and Sciences Graduate Travel Award (Spring 2022)
* Indiana University College of Arts and Sciences Graduate Fellowship (Fall 2019 – Spring 2020)
* Fellowship of the International Centre for Philosophy in North-Rhine-Westphalia, Germany (Summer 2018)
* Peking University Graduate Academic Scholarship (Fall 2016 – Spring 2019)
* Peking University Graduate Special Scholarship (Fall 2017)
* Undergraduate Research Funded by Peking University Education Foundation (Summer 2014 – Fall 2015)
* Peking University New Undergraduate Student Scholarship (Fall 2012)

**TEACHING**

Indiana University

* CLLC-L220 Uses of the Past: The Scientist as Storyteller. Main instructor. (Fall 2023)
  + Self-proposed course for the Collins Living-Learning Center, selected through a course competition organized by the Board of Educational Programming and approved by the Collins Faculty Curriculum Committee.
  + Offered as part of the College's *Themester* 2023 focusing on Lux et Veritas | Light and Truth. Received a curriculum boost grant of $350. *Themester* is a fall program that showcases the College's teaching and scholarship.
* HPSC-X200 Scientific Reasoning. Main instructor. (Spring 2023)
* COLL-X101 Experimental Topics. “Cyberpunk History and Philosophy”. Joint instruction with Jared Neumann. (Fall 2020)
  + Self-proposed course for the College of Arts and Sciences.
* COLL-C104 Critical Approaches: Social and Historical. “What is Science and Who Cares?” (discussion section). Main instructor: Prof. Jordi Cat. (Spring 2021, Spring 2022)
* HPSC-X200 Scientific Reasoning (discussion section). Main instructor: Prof. Jordi Cat. (Fall 2020, Fall 2021, Fall 2022)
* HPSC-X102 Revolutions in Science: From Plato to NATO (discussion section). Main instructor: Prof. Domenico Bertoloni Meli (Spring 2024)

Peking University

* “Dialectics of Nature” Teaching Assistant. Main instructor: Prof. Yuanbiao Ren. (Fall 2017)

**OTHER WORKING AND Service EXPERIENCES**

**Department of History and Philosophy of Science, Indiana University Bloomington**, IN, USA

*Student Assistant*, Jun 2020 – Aug 2020

* + Organizing abstracts and paper submissions to the Integrated HPS (&HPS) Conferences and constructing a database for past conference records. Project funded by NSF.

*Graduate Student Social Coordinator*, Jun 2021 – May 2022

* + Planning social events and communicating those events to the other grad students.

*GPSG Coordinator*, Aug 2022 – May 2024

* + Representative for the department in the Graduate and Professional Student Government.

Others:

* + Organizer of online HPS summer reading group during pandemic time
  + Organizer of HPS writing/working group in 2024
  + Organizer of a cross-disciplinary reading group in *Trends in Cognitive Science* in 2024

**Graduate and Professional Student Government, Indiana University Bloomington**, IN, USA

*Member of the Awards Committee*, Oct 2022 – Jun 2024

* + Reviewing and distributing awards for graduate academic travel grants and research grants.

**Institute of Humanities and Social Sciences, Peking University**, Beijing, China

*Student Assistant*, Jan 2017 – Jan 2018

* + Translation of scholar handbooks and websites from Mandarin to English.
  + Organization and documentation of academic lectures.

**Department of Philosophy, Peking University**, Beijing, China

*Student Assistant*, Sep 2017 – Aug 2018

* + Organization of the World Congress of Philosophy (WCP) 2018.

**College of Chemistry and Molecular Engineering, Peking University**, Beijing, China

*Research Assistant*, *Bioinorganic Laboratory*, Dec 2013 – Jul 2015

* + Independent research: Synthesis and fluorescent properties of Platinum reconstituted myoglobins. Funded by Peking University Education Foundation.
  + Collaborated research: Catalytic properties Manganese reconstituted myoglobins.

**Zhengjian Kendo Dojo**, Bejing, China

*Kendo Instructor*, 2016-2019

**LANGUAGES AND SKILLS**

* Mandarin (native)
* English (fluent)

● German (equivalent to B1)

● Japanese (JLPT N2)

● Latin (2 years)

● Programming (python, Matlab, C++)

● Kendo (4th Dan)