

# Yumeng HOU

Doctoral Researcher, Laboratory for Experimental Museology, Digital Humanities Institute, EPFL  
Email: yumeng.hou@epfl.ch | Address: eM+, Rue des Jordils 41, 1025 St-Sulpice VD, Switzerland  
[Website] | [ORCID] | [SCOPUS] | [Google Scholar] | [LinkedIn]

## 1. Education

**Docteur ès Sciences (PhD), specializing in Digital Humanities and Computational Archives** 2020 – 2024  
*Laboratory for Experimental Museology, EPFL, Switzerland*

Dissertation title: “EncodingActs: Modeling, Representing and Transmitting Embodied Knowledge in Traditional Martial Arts” | Supervisor: Sarah Kenderdine

Committee: Clarisse Bardiot, Lik Hang Tsui, Frédéric Kaplan, Jérôme Baudry, Sarah Kenderdine

**MSc in Computer Science** 2015 – 2017  
*School of Computer and Communication Sciences, EPFL, Switzerland*

GPA: 5.4/6 | Thesis title: “Visualizing Personal Nutrition Intake and Emotions”; Supervisor: Pearl Pu

**BEng in Digital Media Technology** 2010 – 2014  
*College of Computer Science and Technology, Zhejiang University, China*

GPA: 3.8/4 | Thesis title: “Visualizing Topic Evolutions in Wikipedia”; Supervisor: Wei Chen

**Exchange Student in Human-Computer Interaction** 2013 – 2014  
*Department of Computer and Systems Sciences, Stockholm University, Sweden*

GPA: A | Recipient of Exchange Scholarship (~\$5,000); Mentor: Preben Hansen

## 2. Research and Professional Experience

**Doctoral Researcher** 2020 – 2024  
*Laboratory for Experimental Museology, EPFL; Supervisor: Sarah Kenderdine*

- Research fields: Digital Museology, Computational Archives, Intangible Heritage, Digital Humanities
- Major contributions:
  - Computational enhancement of the *Hong Kong Martial Arts Living Archive* [\[link\]](#)
    - Systemising martial knowledge into data science models
    - Converting multimodal datasets into digital representations,
    - Transforming the archive into a knowledge system composed of operable knowledge graphs.
  - Led the *Computational Interoperability for Intangible and Tangible Cultural Heritage* project [\[link\]](#)

**Visiting Researcher** July – Dec 2022  
*Visualization Research Centre, Hong Kong Baptist University; Supervisor: Jeffrey Shaw*

- Research fields: Digital Archives, Digitization, Creative Media, Expanded Curation
- Major contributions:
  - Collaborative researcher for *Transforming Lingnan Martial Arts as a Movement and Performing Art through Digital Pedagogy, Interpretation and Performance* [\[link\]](#)
  - Contributed to *Future Cinema Systems: Next-Generation Art Technology* [\[link\]](#)
  - Archival analysis for *Digital Archive of Early Photography of China*, Moonchu Foundation

**Creative Tech Lead** 2019 – 2020  
*\_box Interaction, Hangzhou, China*

- Responsibilities: Led creative tech solutions for exhibitions and museums, leveraging data visualization, media technologies, and cloud solutions to enhance interactivity, immersion, and engagement.

**Technical Product Manager – Media Cloud Services** 2017 – 2019  
*Alibaba Cloud, Hangzhou, China*

- Responsibilities: Acted as the product owner for Real-time Communication and Live-streaming cloud services, collaborating with 30+ technical experts for the research and development of SDKs and APIs.

**Digital Strategist (part-time)** 2019 – 2020  
*NewStyle Media Group, Beijing/Hangzhou, China*

- Responsibilities: Provided strategic advisory and solution architecture on digital transformation, office automation, and data-driven business intelligence.

**Research Assistant** 2013 – 2015  
*Visual Analytics and Intelligence Group, Zhejiang University; Supervisor: Prof Wei Chen*

- Research fields: Information Visualization, Visual Analytics, Human-Computer Interaction

### 3. Teaching and Supervision

- Course: Cultural Data Sculpting (DH-404)**, Postgraduate Course, EPFL 2021 – 2024
- My roles: Lecturer, project mentor, assessor, guest talk and student administrator.
  - Semesters involved: Spring 2021, 2022, 2023, 2024
- Course: Digital Art History**, Postgraduate Course, University of Basel Spring 2022
- My role: Guest Lecturer for Computational Museology and Digital archives.
- Course: Machine Learning (CS-433)**, Postgraduate Course, EPFL Fall 2020
- My roles: Project Mentor for applied data science projects for two groups of three students.
  - Students: Fadel Mamar Seydou, Cian David, Quiroz Fernandez Javiera Ignacia, Fornaroli Alessandro Filippo, Mocan Razvan-Florin, Aboueloula Ayman
- Course: Cross-Media Data Visualization**, Undergraduate Course, Zhejiang University Spring 2014
- My role: Teacher Assistant for practical programming in storytelling visualization projects.
- Project Supervisor: Master’s Project in Digital Humanities**, EPFL 2023 – 2024
- Title: Interactive Interface for Exploring a Martial Arts Living Archive; Student: Xinyi Ding
- External Project Mentor: Master’s Project in Computer Science**, University of Luxembourg 2023 – 2024
- Title: Pattern Recognition of Martial Arts Fighting Sequences; Student: Steve Huguenin
- Project Supervisor: Master’s Project in Computer Science**, EPFL 2021 – 2022
- Title: Building a Knowledge Graph of Kung Fu Masters; Student: Lin Yuan
- Project Supervisor: Master’s Project in Computation and Mathematics**, EPFL 2020 – 2021
- Title: Modelling Martial Arts Movements through Deep Learning; Student: Fadel Mamar Seydou

### 4. Academic Services

**Peer Reviewer for Scientific Journals** 2022 – now

*Heritage Science, Journal on Computing and Cultural Heritage, Digital Scholarship in the Humanities, Journal of Human-Computer Interaction, International Journal of Heritage Studies, Cogent Social Sciences, Multimedia Tools and Applications, International Journal of Open Humanities Data*

**Peer Reviewer for International Conferences** 2022 – now

*Digital Humanities, IEEE VIS, International Conference on Movement and Computing*

#### Conference Services

- Program Committee, *2nd International Conference on AI-generated Content (AIGC)*, Beijing, 21-22 Dec 2024
- Scientific committee, *Going Global? Chinese Popular Culture(s) and Cultural Platforms’ International Contraflows*, Seminar on Global Media and China, Communication University of China, Beijing, end of 2024
- Session Chair, *Digital Humanities Conference 2024*, Washington, 6-10 Aug 2024
- Session Chair, *New Paradigms for Accessing and Curating Audiovisual Collections*, Lausanne, 28-29 Sep 2023
- Coordinator, *Beyond Search: Opening Up Audiovisual Content for Humanities Studies*, Lausanne, 25-26 Sep 2023
- Fundraiser & Coordinator, *PhD Seminar on Human Factors in Digital Humanities*, Lausanne, 2-3 Dec 2021

**PhD Student Representative, EPFL** 2021 – 2023

**Committee Member Doctoral School of Digital Humanities, EPFL** 2021 – 2023

#### Professional Associations

- Member of Europeana Tech Community & Research Community, Europeana Network Association (2022 – present)
- Member of European Association for Digital Humanities (2023 – present)
- Member of AI4LAM - Artificial Intelligence for Libraries, Archives & Museums (2021 – present)
- Member of ACM - Association for Computing Machinery (2021 – present)

### 5. Awards and Grants

**Nomination for EPFL Doctorate Award 2024/2025**: Recognition for exceptional doctoral work (pending final decision).

**Finalist for Best Paper Award**, Digital Humanities 2023: Recognition of high-quality research by an emerging scholar.

**PI, EPFL-SNFS Doc.Mobility Grant 2022** (~US\$13k): A funding program to support a promising research stay abroad.

**PI, Swissuniversities Support Program 2021** (~US\$9k): funds for organising a Digital Humanities PhD Seminar.

Recipient of the EuropeanaTech 2023 Conference Travel Bursary Award (~US\$600).

Lead Researcher, EPFL-UNIL CROSS Grant for Collaborative Research on Science and Society 2021-2022 (~US\$60k).

## 6. Publications

### Refereed Journal Articles

Hou, Y.\* & Kenderdine, S. (2024). "Ontology-based Knowledge Representation for Traditional Martial Arts". *Digital Scholarship in the Humanities* (SSCI, AHCI), 39(2), 575-592. doi: 10.1093/llc/fqae005

Hou, Y.\*, Seydou, F., & Kenderdine S. (2023). "Unlocking a multimodal archive of Southern Chinese martial arts through embodied cues". *Journal of Documentation* (SSCI), *Special Issue on AI for Cultural Heritage*. doi: 10.1108/JD-01-2022-0027

Hou, Y.\* & Yuan, L. (2023) "Building a knowledge graph of Chinese kung fu masters from heterogeneous bilingual data". *Journal of Open Humanities Data* (DOAJ), Vol 9, No. 27, 1-12. doi: 10.5334/johd.136

Hou, Y.\*, Kenderdine S., et al. (2022). "Digitizing Intangible Cultural Heritage Embodied: state of the art". *Journal on Computing and Cultural Heritage* (SCIE, AHCI), 15(3), No. 55, 1-20. doi: 10.1145/3494837

Hou, Y.\* (2021). "Accessing, Representing, and Transmitting Cultural Heritage through Digital Archives: challenges and opportunities". *Digital Humanities Research*, 4(1), 77-91. <http://dhr.ruc.edu.cn/CN/Y2021/V1/I4/77>

Alliata, G.\*, Hou, Y. & Kenderdine, S. (2024). "Augmenting access to embodied knowledge archives: a computational framework". *Digital Humanities Quarterly* (ESCI), 18(2). [dhq/vol/18/2/000722](https://doi.org/10.46544/dhq.vol18.2.000722)

Adamou, A.\*, Picca, D., Hou, Y. & Granados-García, P. L. (2023). "The Facets of Intangible Heritage in Southern Chinese Martial Arts: Applying a Knowledge-Driven Cultural Contact Detection Approach". *Journal on Computing and Cultural Heritage* (SCIE, AHCI), 16(3), No. 63, 1-27. doi: 10.1145/3606702

Xia, J.<sup>1</sup>, Hou, Y.<sup>1</sup>, Chen, Y.V., Qian, Z.C., Ebert, D.S., & Chen, W.\* (2017). "Visualizing rank time series of Wikipedia top-viewed pages". *IEEE computer graphics and applications* (SCIE), 37(2), 42-53. doi: 10.1109/MCG.2017.21

### Refereed Conference Proceedings

Hou, Y. (2023). "Co-encoding embodied knowledge in Southern Chinese martial arts: a collaboration between computists, experts, and digital models". In *Digital Humanities 2023: Book of Abstracts*, 261-262. doi: 10.5281/zenodo.8107443

Hou, Y.\*, Kenderdine S. (2022). "Encoding the Whole-of-Environment Knowledge for Intangible Cultural Heritage". In *AMPS Proceedings Series, 29.1 - (IN)TANGIBLE HERITAGE(S): Design, culture and technology*, 121-132.

Adamou, A.\*, Hou, Y.\*, Picca, D.\*, et al. (2021). "Ontology-mediated cultural contact in Southern Chinese martial arts". In *Proceedings of the International Joint Workshop on Semantic Web and Ontology Design for Cultural Heritage*, 1-6.

Picca, D.\*, Adamou, A.\*, Hou, Y., et al. (2022). "Knowledge organization of the Hong Kong Martial Arts Living Archive to capture and preserve intangible cultural heritage". In *Digital Humanities 2022: Book of Abstracts*, 329-332.

Xia, J., Chen, W.\*, Hou, Y., et al. (2016). "*Dimscanner*: A relation-based visual exploration approach towards data dimension inspection". In *Proceedings of 2016 IEEE Conference on Visual Analytics Science and Technology*, 81-90. IEEE. doi: 10.1109/VAST.2016.7883514

### Contributions to Books

Kenderdine, S.\*, Hibberd, L., Shaw, J., Chang, T.Z., & Hou, Y. (2023). "Archery Rites: Re-making Confucian Rites". Chapter in *Chinese Archery Studies: Theoretical and Historical Approaches to a Martial Discipline*, 249-278. Springer.

Hou, Y. (2024). "Reliving martial arts classics in the digital era". In *Dushu*, issue 10, 22-27, Joint Publishing (H.K.).

### Edited Volume

Hou, Y. (Ed.). (2021). *Proceedings of the EPFL PhD Seminar "Human Factors in Digital Humanities"*. EPFL Infoscience.

## 7. Selected Exhibitions, Installations, and Creative Works

**Collaborative Researcher.** 嶺南武術之數碼藝術及教育試驗計劃 (Transforming Lingnan Martial Arts as a Movement and Performing Art through Digital Pedagogy, Interpretation and Performance), 2021-2023. [[website](#)]

**Co-curator.** "詩 e 柯橋" 數字詩路文化體驗館 (Digital Experience Centre for Chinese Classical Poetry Culture in Keqiao), 2020-2021. In collaboration with \_box Interaction Co. Ltd and Xinhua Zhiyun Technology Co. Ltd. [[demo](#)]

**Creation Team.** *Harper's Bazaar Icons Party Shanghai*, 2021. for interactive installations, with \_box Interaction Co. Ltd. [[demo](#)]  
*Natural Origins of The Internet*. Data Art, permanent installation at the 2050 Museum of Inspiration, Hangzhou. [[demo](#)]

**Creator.** *ImmerScience*. An immersive, interactive learning space created for Daning International School, Shanghai. [[demo](#)]

**Creator.** *Mirrorj*. Conceptual design of a virtual 3D space, disrupting exhibiting conventions in the augmented era. [[blog](#)]

**Co-creator.** *Aqua*. A virtual aquarium for motivating knowledge sharing activities at Médecins Sans Frontières (MSF). [[demo](#)]

**Creator.** *EmovDiary*. A visual interactive data journal for reviewing personal nutrition intake and emotion flows. [[demo](#)]

**Creator.** *MOOC Learning Flow*. A visualization of online learning clickstream patterns with outcome prediction. [[demo](#)]

## 8. Selected Software and Open-Source Contributions

### MIT Licensed Projects

*DeepMotionism*: A Python toolkit for motion similarity embedding across video and mocap data. Copyright Owner. [[GitHub](#)]

*MAon*: The First Annotated RDF/Turtle Ontological Dataset on Southern Chinese Martial Arts. Copyright Owner. [[GitHub](#)]

### Software Copyright Certificate (Registered in China, “計算機軟件著作權登記證書”)

*360 Panoramic Interactive Poem Teaching Software* (360 環幕詩詞互動授課). No. 11105935 (2022). Contributor.

*Interactive Projection Book Desktop Software* (互動投影書桌軟件). No. 11105825 (2022). Contributor.

*Interactive Card-Triggered Archive Desktop Software* (卡片互動檔案桌軟件). No. 11105823 (2022). Contributor.

*Interactive VR Natural Course Learning Software* (互動 VR 自然課程學習軟件). No. 11105936 (2020). Contributor.

## 9. Conferences and Symposia

### Keynotes

“Modelling, representing, and transmitting martial arts knowledge from digital archives” (forthcoming). Invited keynote speech for the *5th International Martial Studies Conference*, Aug 25 2024, Taipei.

“Building and Disrupting the Hong Kong Martial Arts Living Archive”, Invited keynote lecture for the *Seminar on Digital Preservation of Cultural Heritage*, Jan 5 2024, Renmin University of China, Beijing/online.

“Towards Digital Preservation of Traditional Chinese Martial Arts”. Invited keynote speech for the *4th International Martial Studies Conference*, Nov 30 2022, South China Normal University, Guangzhou/online.

### Selected Oral Contributions to Conferences and Invited Talks

“Archiving, Modelling and Representing Knowledge in Southern Chinese Martial Arts” (forthcoming). Accepted presentation at *Charting the European D-SEA: Digital Scholarship in East Asian Studies Conference*, July 11-12, 2024, Berlin.

“LABrowser: Crafting an interactive interface for exploring a martial arts living archive” (forthcoming). Accepted presentation at the *ADHO Digital Humanities Conference 2024: Reinvention & Responsibility*, Aug 6-10 2024, Washington.

“Ontology Approach to MoCap Archives”, invited lecture for MetaTool Team at Delft University of Technology, Apr 30 2024.

“Reimagining cultural archive access and engagement in the digital age”. Presentation at the *International Symposium on Transformations in Museums through Digital Initiatives*, Jan 12-13 2024, UMAG The University of Hong Kong.

“The (in)accessible embodiment: Unfolding the multifaceted knowledge in traditional martial arts”. Paper presentation at *EuropeanaTech 2023*, Oct 11-12 2023, Den Haag.

“Datafication: towards digital transmission of the living heritage of southern Chinese martial arts”. Paper presentation at *The 9th Young Scholars' Forum in Chinese Studies 2023*, Sept 7-8 2023, Hong Kong.

“Augmenting embodied knowledge archives”, presentation at *CHI Seminar on Extended Reality*, May 2-4 2023, Copenhagen.

“Augmenting knowledge exploration using agent-based models: A computational experiment with the HKMALA”. Paper presentation at the *7th International Martial Arts Studies Conference*. June 29 - July 2 2022, Lausanne, Switzerland.

“Articulate similarity: A visual search framework for embodied knowledge in a Confucian rites video archive”. Poster at *16th International Digital Curation Conference (IDCC21)*, April 19 2021, Online.

## 10. Language and Skills

**Language:** Mandarin (native), English (proficient), French (intermediate, B1/B2), Cantonese (elementary).

**Knowledge Fields:** Cultural Heritage, Digital Archives, Semantic Web, Machine Learning, User Experience (UX), Data Visualization, Visual Analytics, VR/AR/XR, Digital/Virtual Museum, Motion Capture, Cloud Solution, HCI

**Programming:** Python, JavaScript (D3.js, three.js, p5.js), SQL/Cypher, R, Java, processing, HTML/CSS, C++, etc.

**Tools:** UE4, Unity, Axure, Media Processing (DaVinci, Photoshop, Audition, AI, etc), Neo4j, Knime, MS Office, etc.

**Others:** Southern Chinese Martial Arts, Archery, Musical Keyboard, Jazz Drumming, Ballet, Yoga