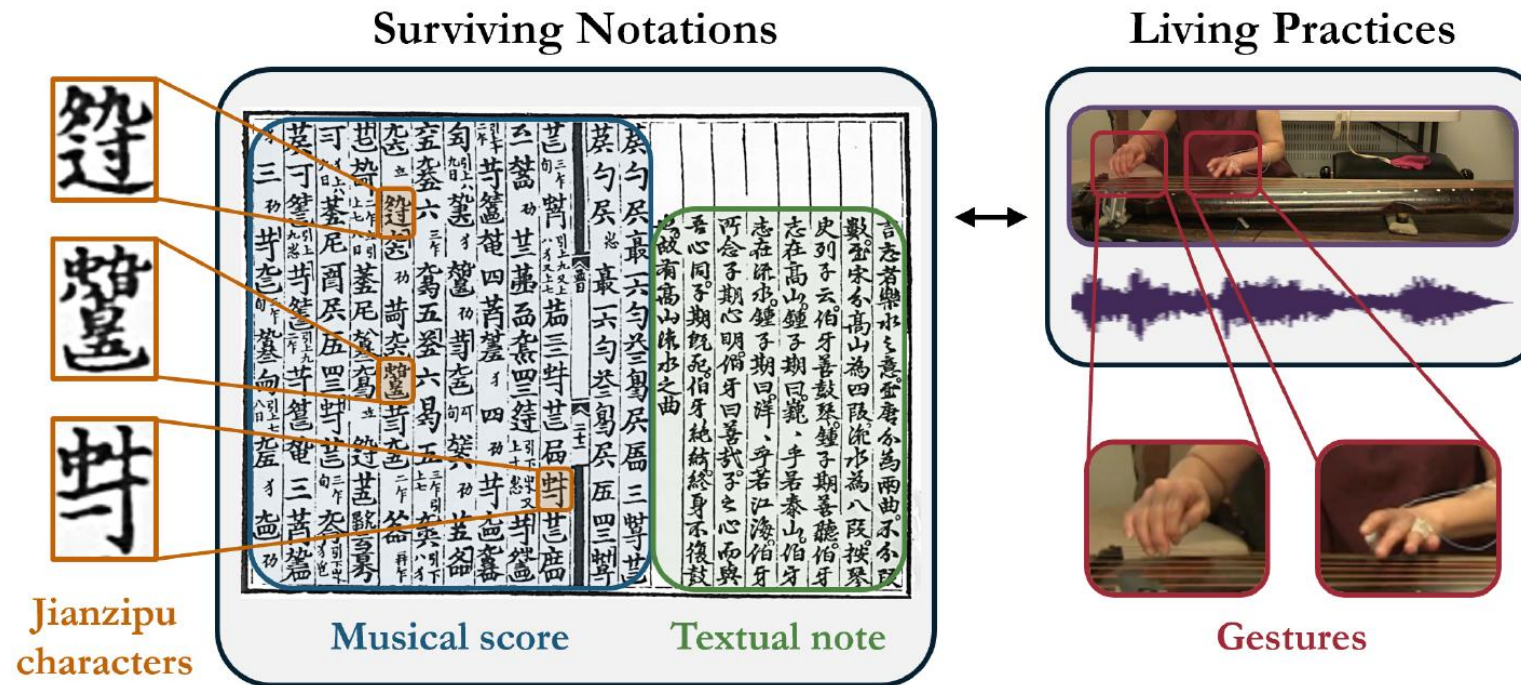


Strokes of Sonic Traditions

Retracing Surviving Guqin Notations and Practices

Hao-Wen Dong



Guqin (古琴)

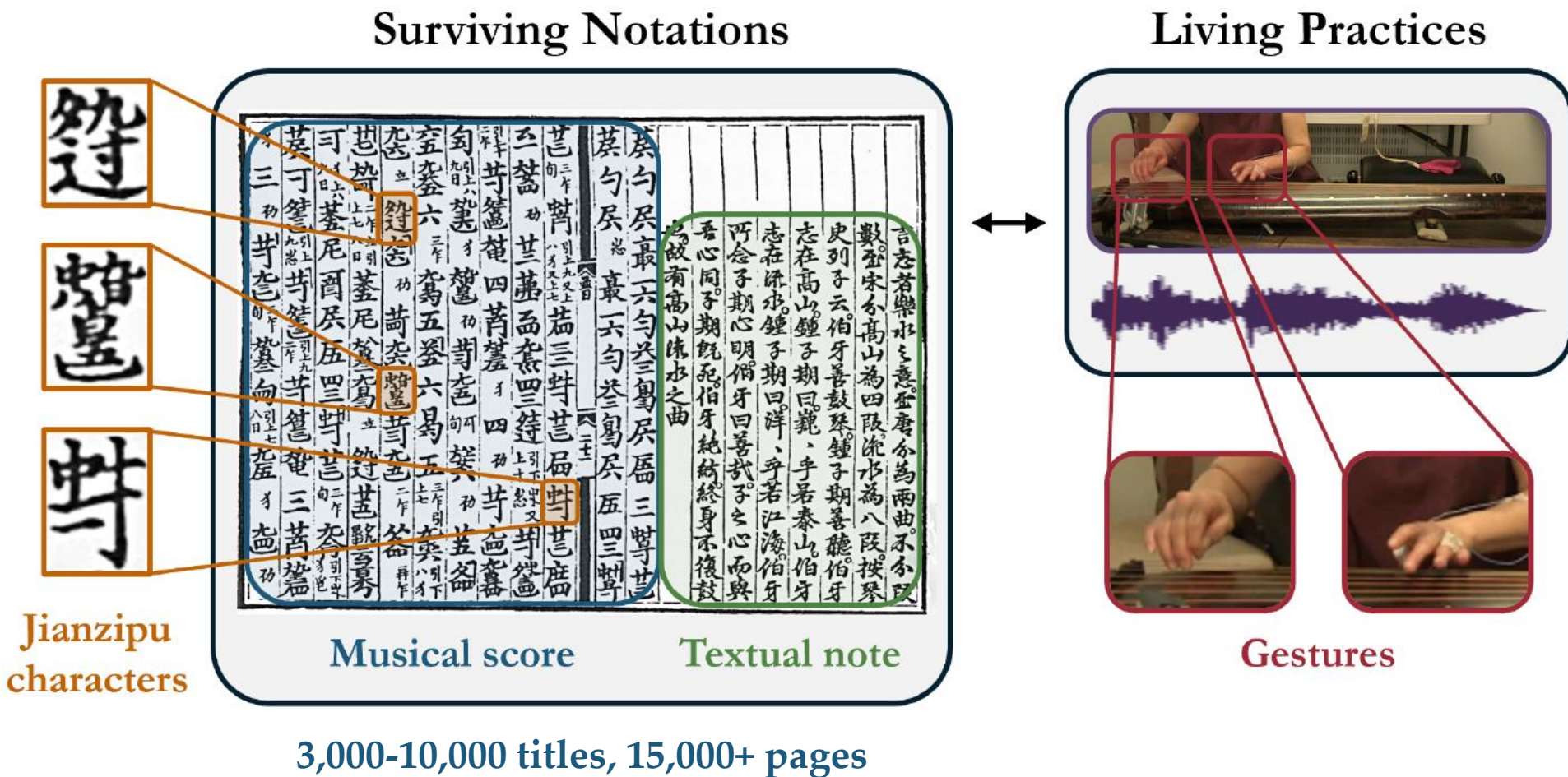
- Literally, “**Old Zither**”
- One of the oldest music traditions, among others



(Han et al., 2025)

Han Han, Vincent Lostanlen, and Mathieu Lagrange, “GuqinSonGest: A multimodal and historically grounded dataset of guqin playing techniques,” *Sound and Music Computing Conference (SMC)*, 2025.

Surviving Corpus & Living Practices



Research Aims

- Developing a **Data-efficient OMR** Framework for Traditional Guqin Notations
- Retrieving **Extra-notational** Musical Parameters of Guqin Music
- Analyzing Guqin Corpus through **Historical Theory, Predictive Pattern Recognition**, and **Automated Knowledge Retrieval**

Jianzipu Notation

- Literally, “**reduced character**” notation
- Used in Song, Yuan, Ming & Qing dynasties (c. 1100-1900)
- A **tablature** notation
- Durations not recorded

Left hand
fingering

String
number



Position

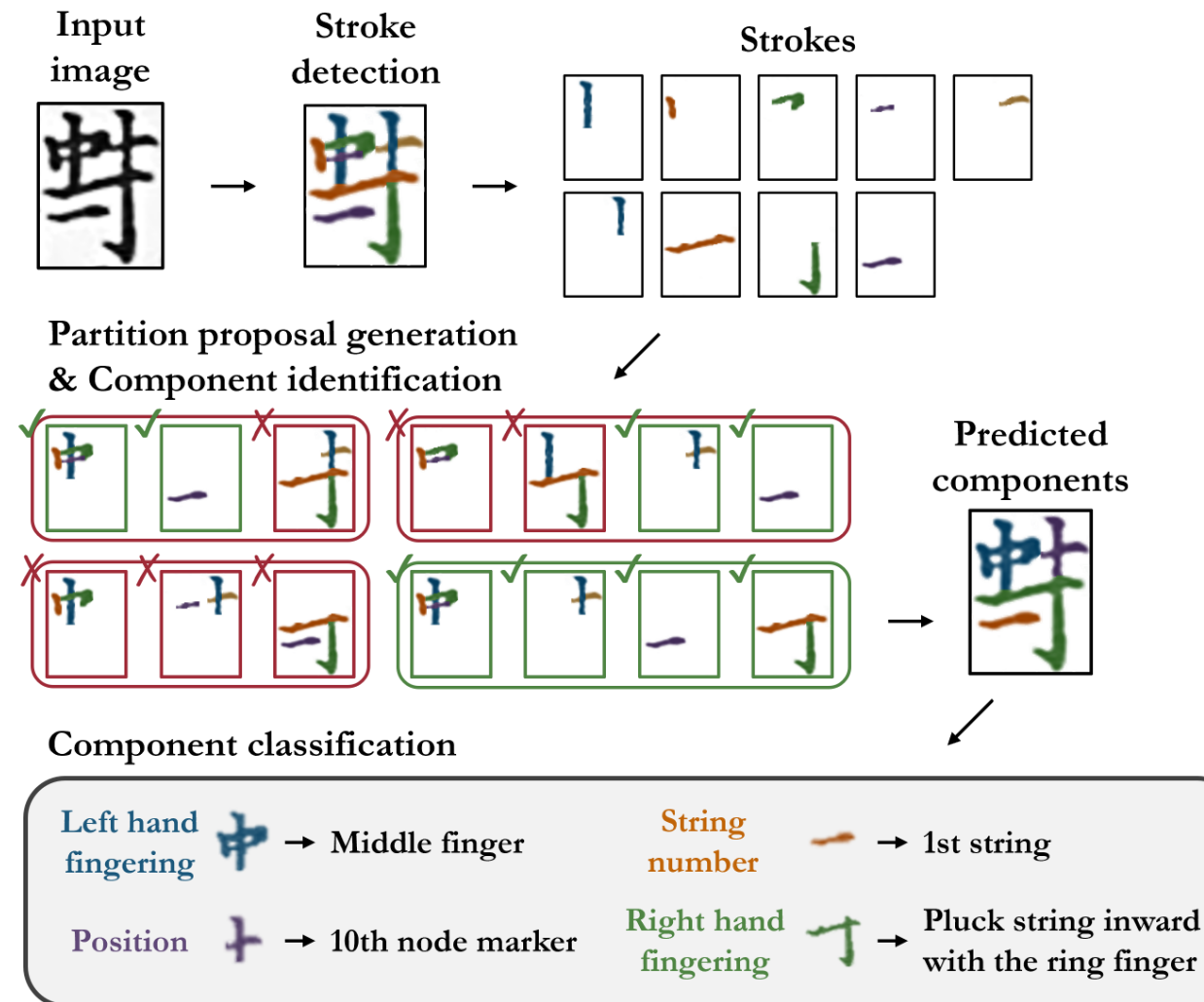
Right hand
fingering

Jianzipu
characters

Surviving Notations

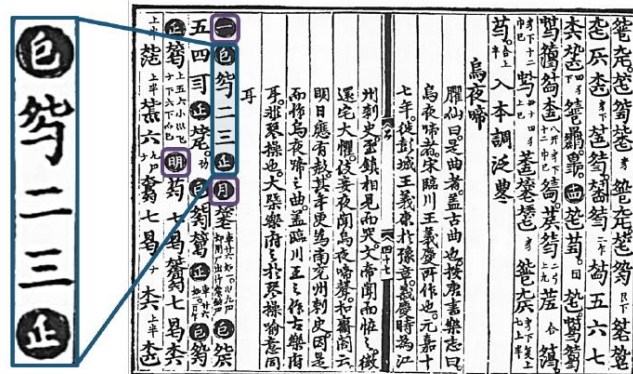
Figure 1: A page from a Jianzipu manuscript. The page is divided into two columns. The left column contains musical notation, which is a series of characters. The right column contains a textual note in Chinese. Three large characters are highlighted with orange boxes and labeled 'Jianzipu characters'. These characters are '逢', '蟹', and '野'. The '逢' character is connected to the 'Position' label, the '蟹' character is connected to the 'Right hand fingering' label, and the '野' character is connected to the 'Left hand fingering' and 'String number' labels. The 'Musical score' label is at the bottom left, and the 'Textual note' label is at the bottom right.

Weakly-supervised Stroke-based OMR



Transcribing the Qinqu Jicheng (30 books, ~16,000 pages)

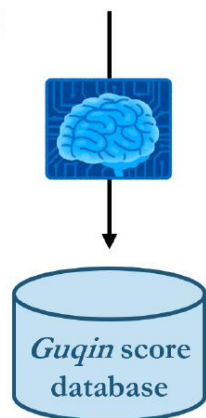
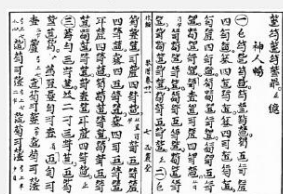
Wuyeti ("Evening Call of the Raven")
in Shenqi Mipu (1425)



Song dynasty *jianzipu* notation

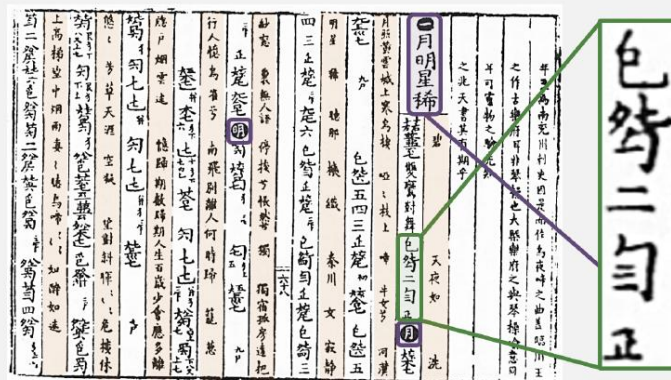
Guqin pieces with
similar motifs

Shenren Chang (1525, 神人暢,
"Rhapsody on a Celestial")



Versions of the same title in other guqin collections

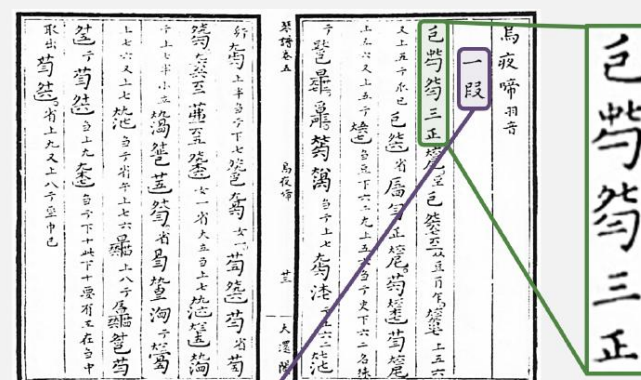
Zheyin Shizi Qinpu (~1500)



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Lytic: Han dynasty *yuefu* ("music bureau")

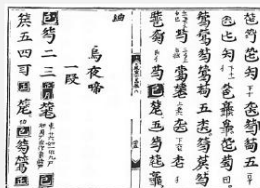
Dahuange Qinpu (1673)



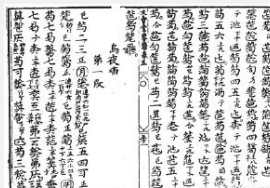
Qing dynasty
jianzipu notation

Programmatic section titles

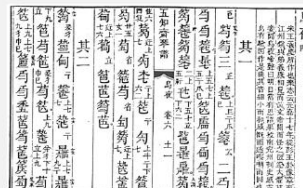
Fengxuan Xuanpin
(1539)



Wenhuitang Qinpu
(1596)



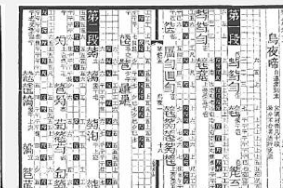
Wuzhizhai Qinpu
(1722)



Ziyuantang Qinpu
(1802)

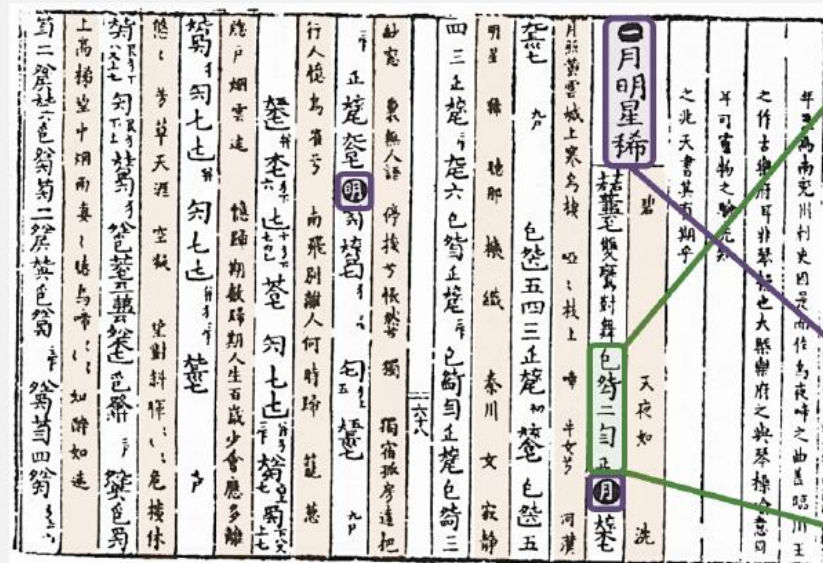


Qinxue Congshu
(1910)



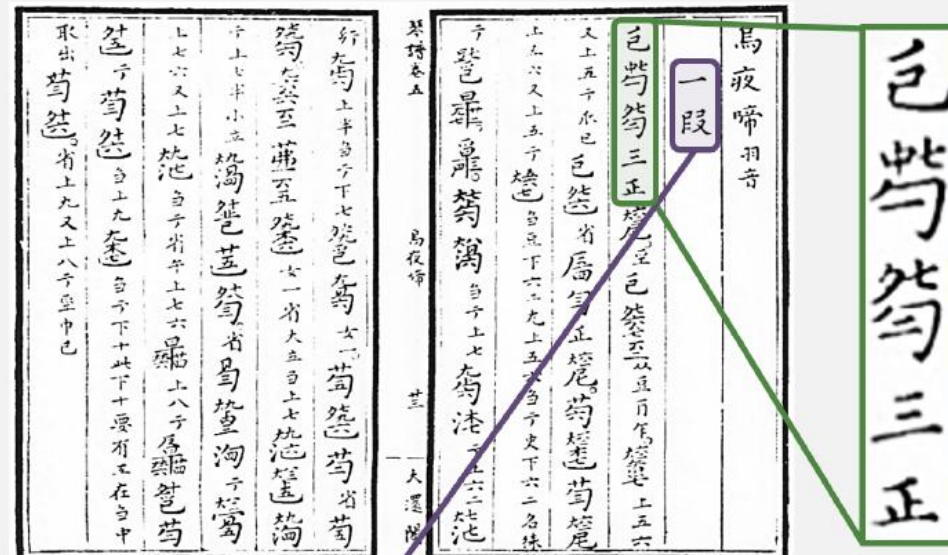
Evolution of the *jianzipu* notation

Zheyin Shizi Qipu (~1500)

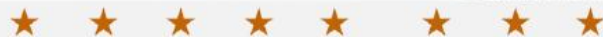


月明星稀

Dahuange Qipu (1673)



月明星稀

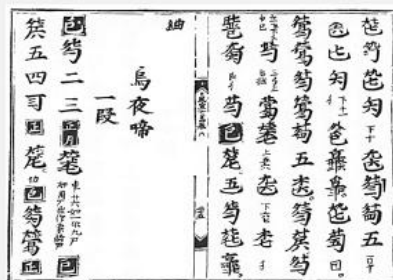


Lyric: Han dynasty yuefu ("music bureau")

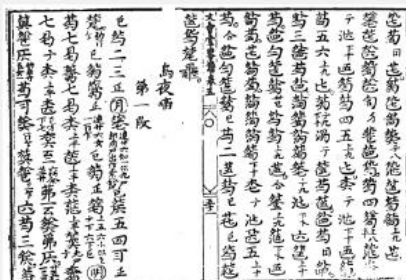
Programmatic section titles

Qing dynasty
jianzipu notation

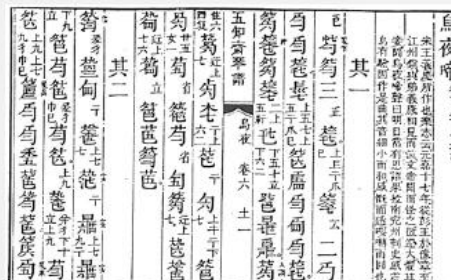
Fengxuan Xuanpin (1539)



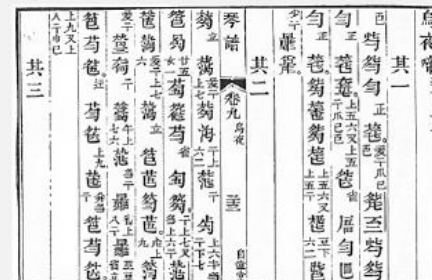
Wenhuitang Qipu (1596)



Wuzhizhai Qipu (1722)



Ziyuantang Qipu (1802)



Qinxue Congshu (1910)

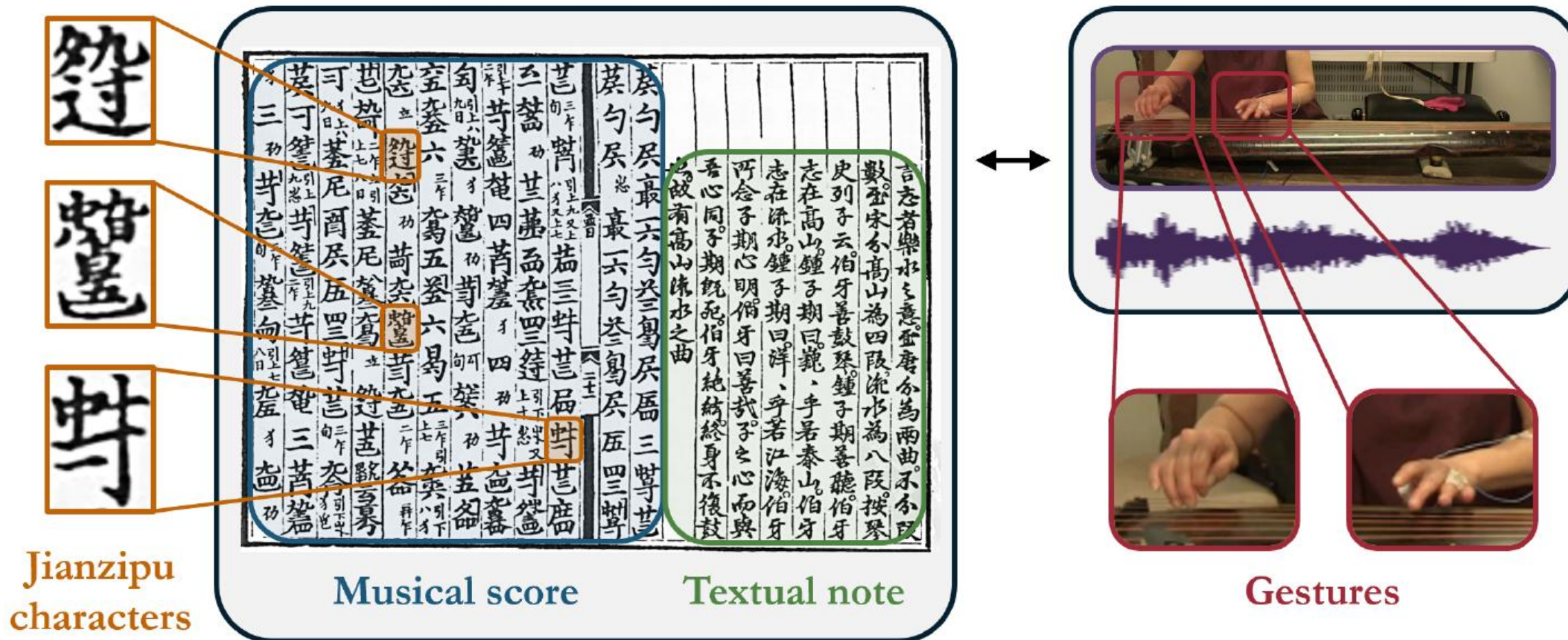


Evolution of the jianzipu notation

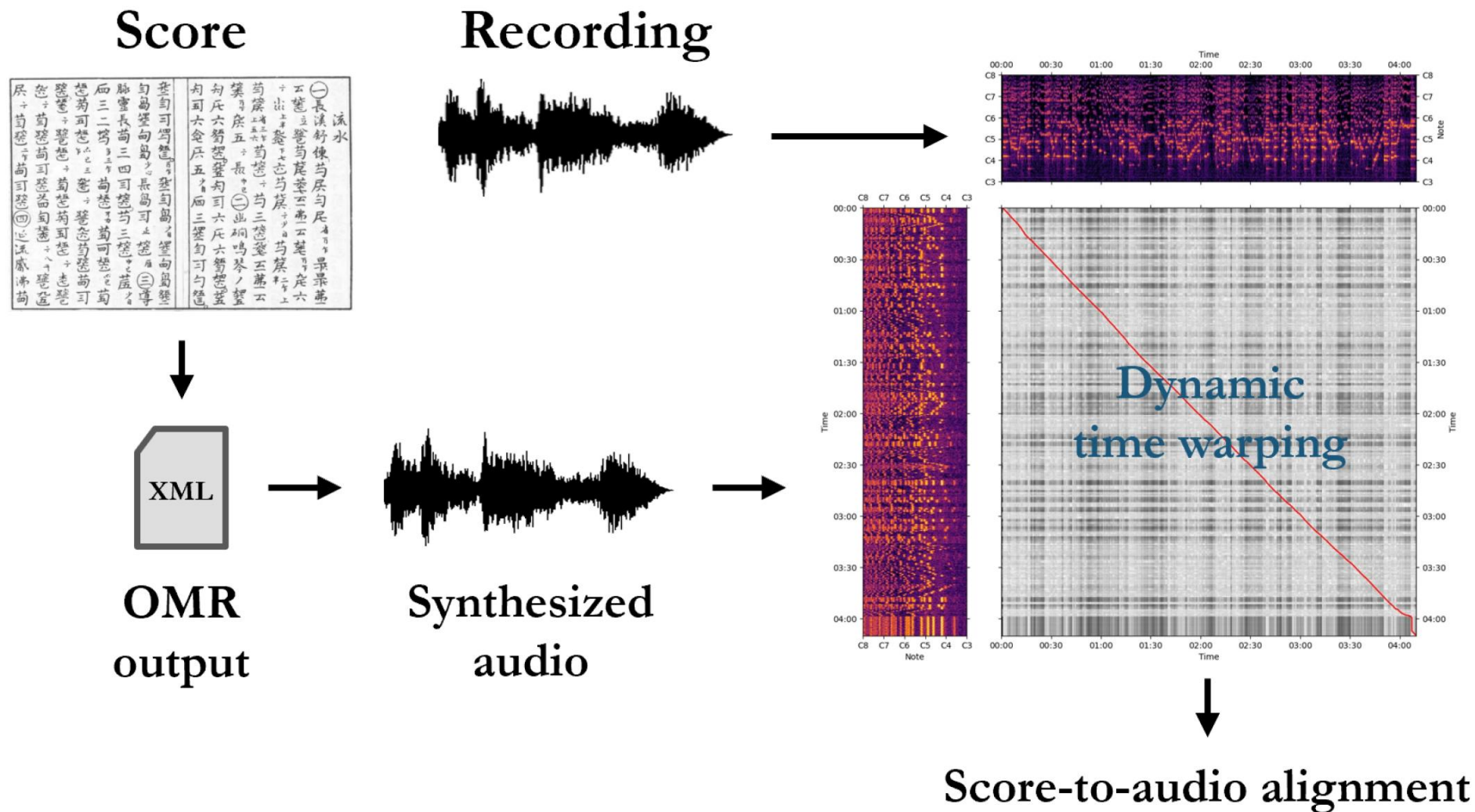
Aligning Surviving Notations & Living Practices

Surviving Notations

Living Practices



Score-to-audio Alignment



Playing Techniques Recognition



(Han et al., 2025)

Han Han, Vincent Lostanlen, and Mathieu Lagrange, "GuqinSonGest: A multimodal and historically grounded dataset of guqin playing techniques," *Sound and Music Computing Conference (SMC)*, 2025.

uang, Yu-Fen, Jen-I Liang, I-Chieh Wei, and Li Su. "Joint Analysis of Mode and Playing Technique in Guqin Performance with Machine Learning," *International Society for Music Information Retrieval Conference (ISMIR)*, 2020.

Analyzing the Guqin Corpus

[illegible]

- Extracting **native qin theory** and **poetic descriptions**
- Discovering meaningful **schematic patterns**
- Exploring the **semantic-musical underpinnings**



QiuHong (Ming dynasty)
(at the Palace Museum)

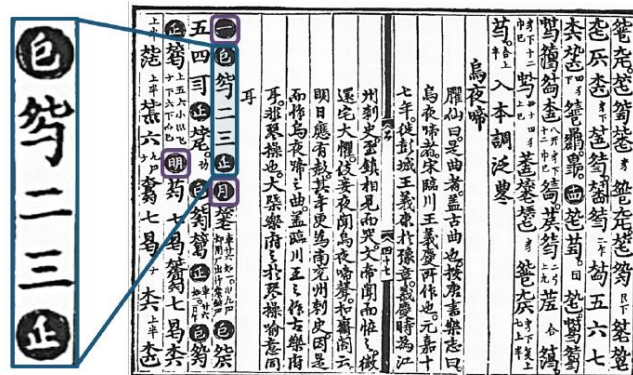
[illegible]

Yilan (“Flourishing Orchid”)
in *Shenqi Mipu*

Jiukuang (“Wine Mad”)
in *Shenqi Mipu*

Analyzing the Guqin Corpus with Digitized Qinqu Jicheng

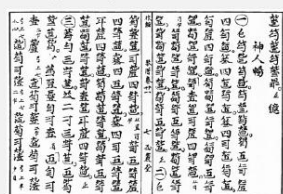
Wuyeti ("Evening Call of the Raven")
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Song dynasty *jianzipu* notation

Guqin pieces with
similar motifs

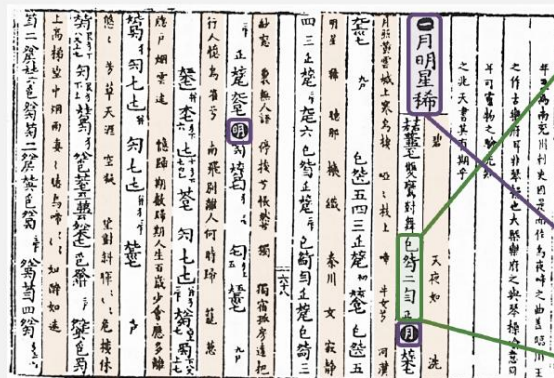
Shenren Chang (1525, 神人暢,
"Rhapsody on a Celestial")



Guqin score
database

Versions of the same title in other guqin collections

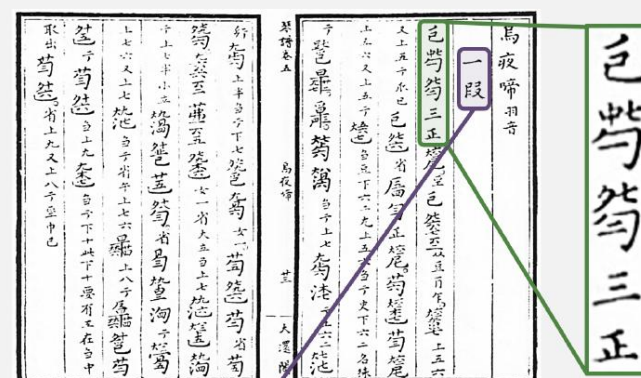
Zheyin Shizi Qinpu (~1500)



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Lytic: Han dynasty *yuefu* ("music bureau")

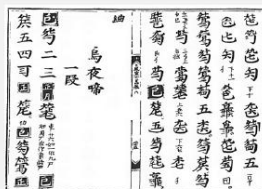
Dahuange Qinpu (1673)



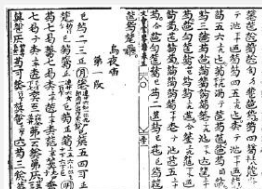
Qing dynasty
jianzipu notation

Programmatic section titles

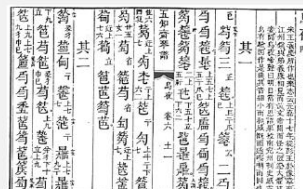
Fengxuan Xuanpin
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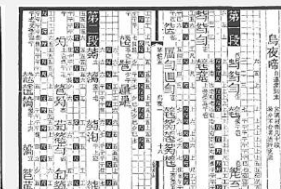
Wuzhizhai Qinpu
(1722)



Ziyuantang Qinpu
(1802)



Qinxue Congshu
(1910)



Evolution of the *jianzipu* notation

Technical Challenges

- How can we **digitize guqin notations** to preserve the most information?
- How can we **adapt optical music/character recognition** for guqin notations?
- How can we **scale semi-automated annotation efforts**?
- How can we **align guqin notations with living practices**?
- How can we **extract native qin theory** from the large corpus?

Research Questions

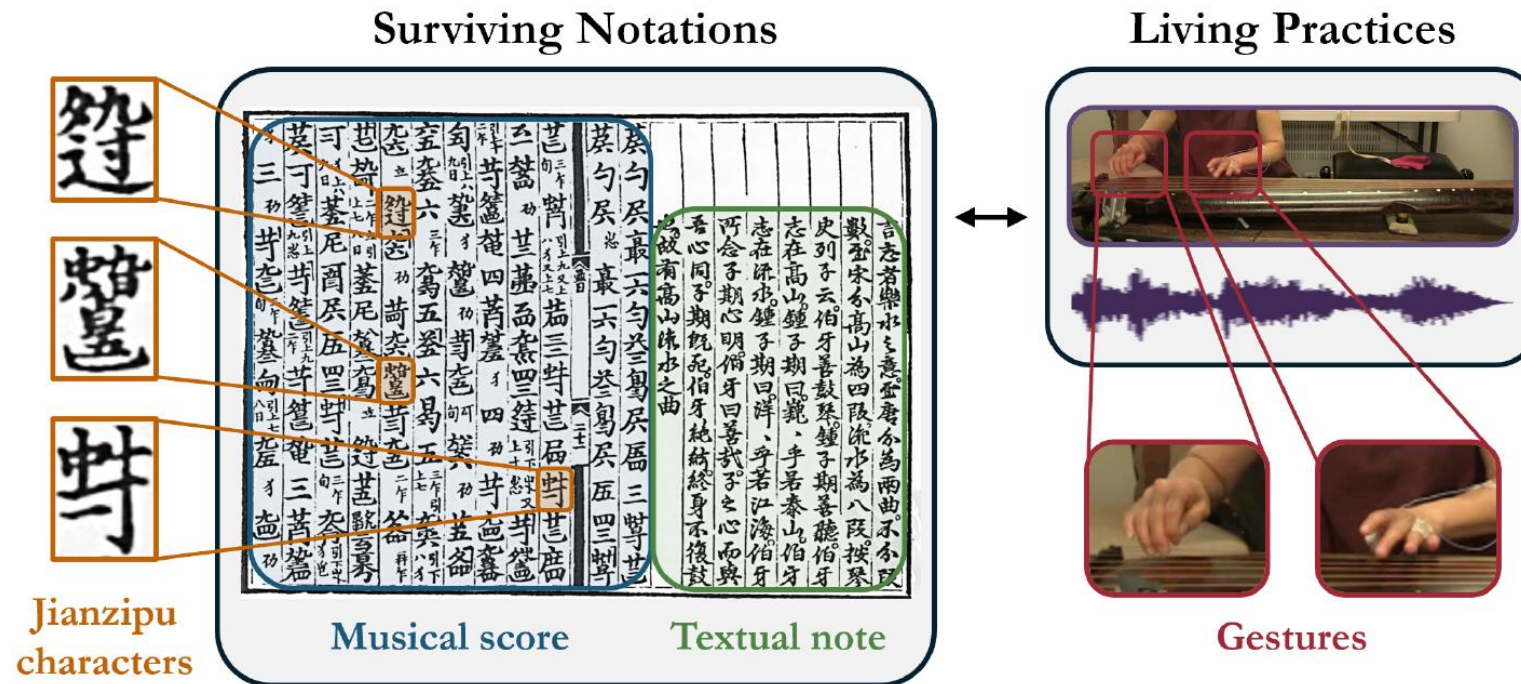
- **Rhythms and durations** of guqin music
- Evolution of the **jianjipu notation**
- Historical development of **stroke-based notation systems** in East Asia
- Computational verification of **qin theories**
- Relationship and patterns between **lyrics** and **music**

Team

- **David Sears** (Music Theory, University of Michigan)
- **Eduardo Veas** (Interactive Systems and Data Science, Graz University of Technology)
- **Ming Tak Ted Hui** (Classical Chinese and Medieval China, University of Oxford)
- **Nathan Martin** (Music Theory, University of Michigan)
- **Joseph Lam** (Musicology, University of Michigan)
- **Ming Wilson** (Music Theory, University of Michigan)
- **Tristan Repolusk** (Digital Humanities, University of Graz)

Strokes of Sonic Traditions

Retracing Surviving Guqin Notations and Practices



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