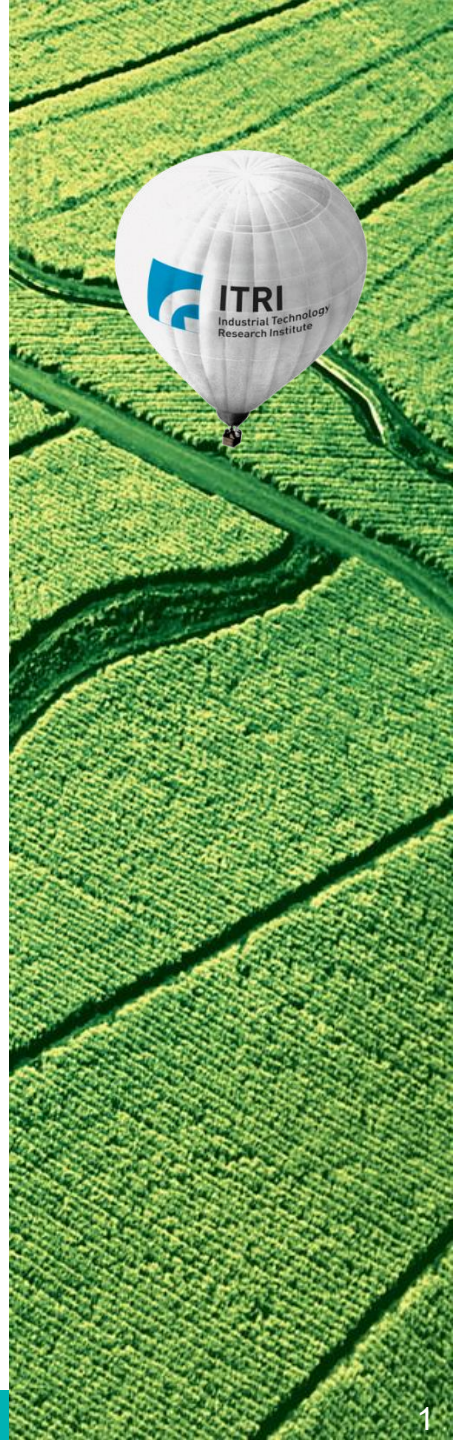
工業技術研究院

Industrial Technology
Research Institute



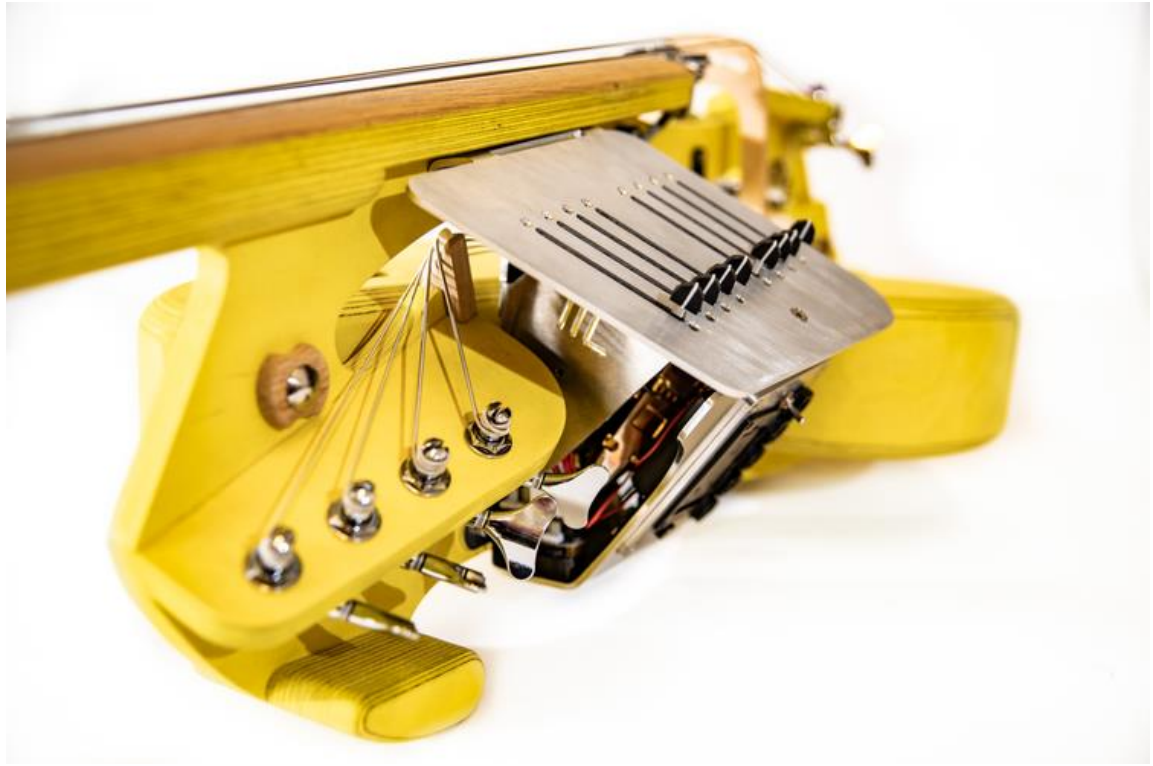
科技藝術書報討論 2025/09/17

INTELLIGENT INSTRUMENTS IN CITIZEN SCIENCE

陳昱璋 113003856

Intelligent Instruments in Citizen Science

The Prix Ars Electronica | Golden Nica 2024



Artificial Intelligence is becoming increasingly human-like and it is now proficient in a key human activity: musical creativity. But what does this mean? How does creative AI change our notions of art, culture, and society? These are the questions that the Intelligent Instruments Lab explores through practice-based research and critical reflection in the experimental humanities. As new machine learning technologies begin to mirror ourselves, we need to look into that mirror and ask how this is changing us.

We study new AI by using music as a platform. In a range of research projects, we develop instruments with cr[illegible] instruments. Grounded equally in technology development and the humanities, we engage with diverse discipl[illegible] centred creative AI, and defining principles of human-AI relations in services and products.

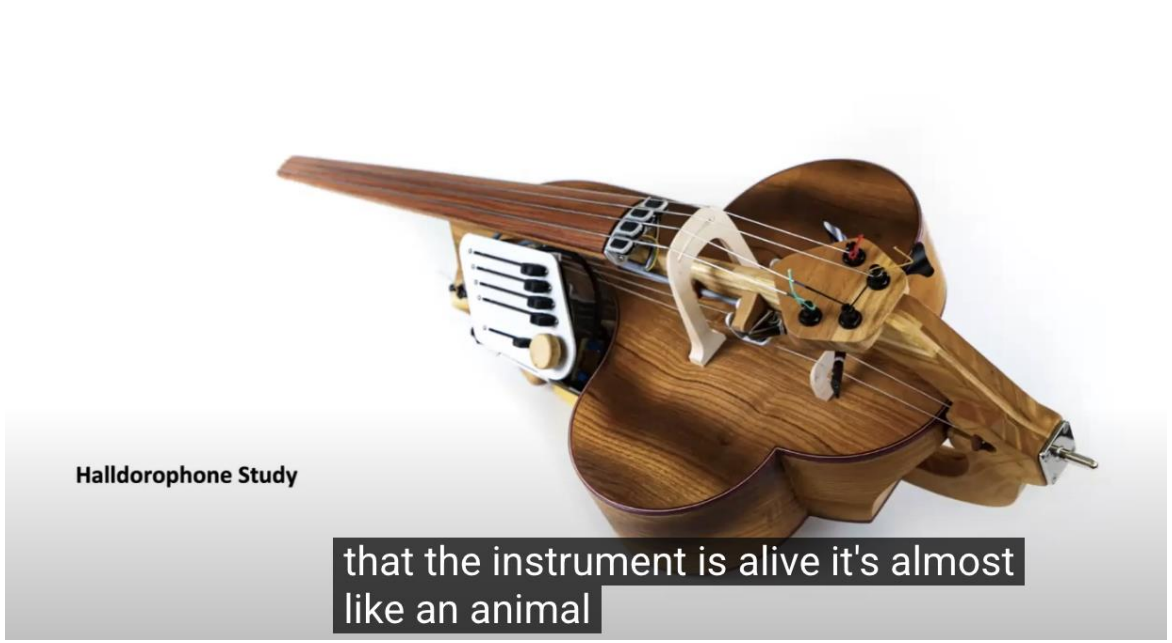
以音樂為媒介，透過實驗與公開參與來研究並反思 AI 創造力如何改變藝術、文化與社會，並建立以人為本的創意 AI 理論與實踐框架。

Our aim is therefore to work in the public eye, to keep our lab open, and to disseminate our work as it happens. We seek public engagement and investment in the research program, as our research is relevant to the questions people are asking already, and to place the lab as a social hub where these questions could be explored in a safe, welcoming, and open intellectual environment. Through the broad reach of music in society, we reach the general public and conduct citizen science with people in a field that people understand and engage with from a personal, emotional, and intellectual manner. This is how we can ask our questions, explore the new ideas that are emerging, analyse the language and discourse, and be part of shaping how we understand creative AI in this unique historical moment.

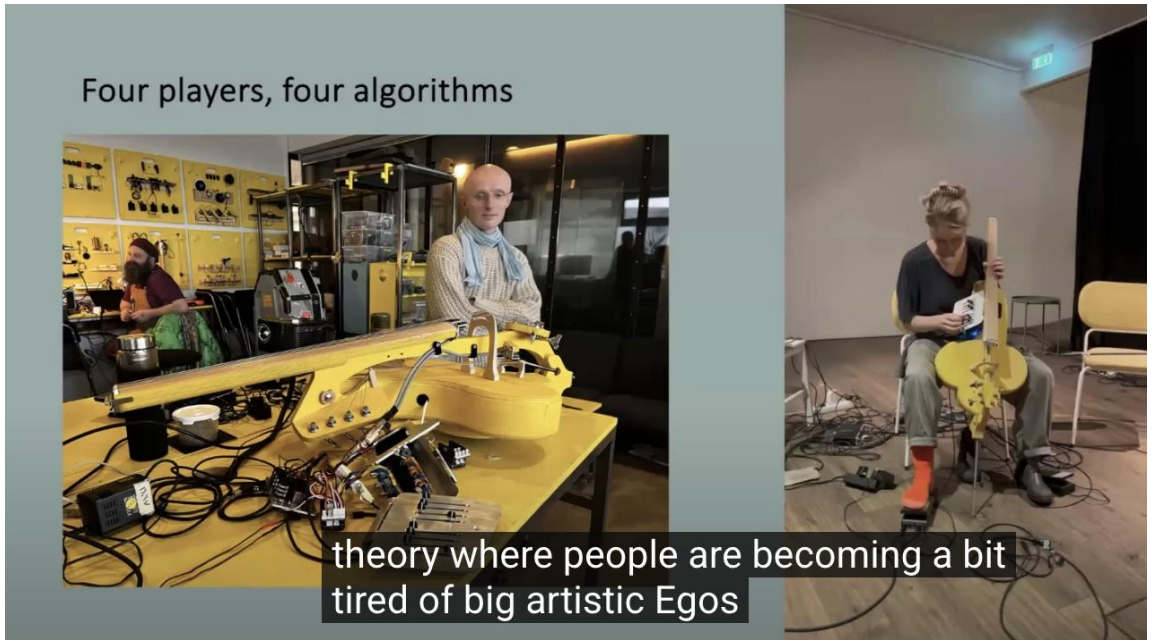
THE **HALLDOROPHONE** IS A CELLO-LIKE FEEDBACK INSTRUMENT.

BY HALLDOR ÚLFARSSON

Thor Magnusson (IS) is a Professor in Future Music at the University of Sussex and a research professor at the University of Iceland. His work focusses on the **impact** of digital technologies on musical creativity, explored equally through practice, theory and education. Magnusson's research is underpinned by the philosophy of technology and cognitive science, exploring issues of embodiment, artificial intelligence, and compositional constraints in digital musical systems as practiced by musicians in concrete situations.



https://www.youtube.com/watch?v=jK-Cp3doAd8

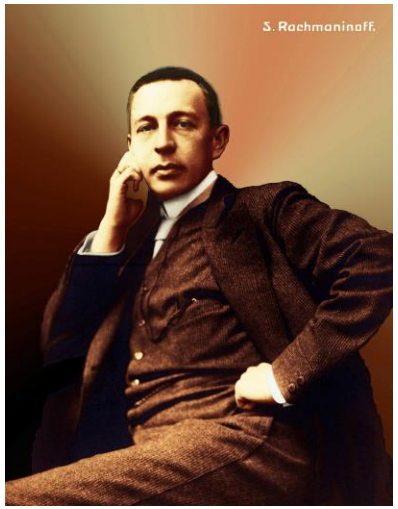


https://www.youtube.com/watch?v=MqHzq1qaGzI&t=289s

His work focusses on the **impact** of digital technologies on musical creativity.

我以為的

HALLDOROPHONE



發明者以為的

HALLDOROPHONE

演奏者以為的

HALLDOROPHONE

” 為什麼冰島的音樂 會走這麼前面？ “

1. 地理孤立與自然環境

•**孤立感**：冰島人口只有三十多萬，島嶼位置又遠離歐陸中心，沒有強大的主流娛樂產業壓力，音樂人自然比較敢嘗試「不一樣」的聲音。

•**自然啟發**：冰島的火山、冰川、極光、荒涼的景色，給音樂人很強烈的氛圍感，容易走向氛圍音樂、實驗聲響、後搖滾等前衛路線（比如 Sigur Rós 的空靈聲響、Björk 的自然取樣與電子實驗）。

2. 小國文化政策與教育

•**政府支持**：冰島政府長期補助藝術文化，創作者不必完全依靠市場求生，可以更自由地探索實驗音樂。

•**教育環境**：學校注重創造力培養，音樂教育不僅是古典訓練，還包含電子音樂、即興、作曲等，讓音樂人早早養成實驗精神。

3. 國際化與在地矛盾

•**向外輸出**：雖然人口少，但冰島音樂人很早就意識到必須走向國際市場（比如 Björk、Of Monsters and Men、Sigur Rós），所以積極融合國際音樂語言。

•**在地特色**：同時，他們會把冰島語、傳統詩歌、民族樂器（如 langspil）融入現代音樂，讓作品既獨特又前衛。

代表人物與樂團

- **Björk**：將流行、電子、實驗、古典聲響結合，是全球前衛音樂的指標人物。
- **Sigur Rós**：後搖滾氛圍代表，甚至自創「Hopelandic」語言來唱歌。
- **Múm**：融合電子與民謠的實驗團體。
- **Ólafur Arnalds / Hildur Guðnadóttir**：把古典弦樂和電子融合，也進軍電影配樂。