

# SHU SAKAMOTO

[ssakamoto21@keio.jp](mailto:ssakamoto21@keio.jp)

5322, Fujisawa-shi  
Kanagawa-Ken, Japan  
Web: mosh-shu.com

May 2022

**Research Keywords:** Neuroscience & Music (Neuromusic), Auditory System, Music Cognition, Emotion, Expectation, EEG, Neural Oscillation, Brain-Computer Interface

## EDUCATION

---

- 2020 – Present      **Graduate School of Media and Governance, Keio University**  
**GAO Scholar (Full Scholarship)**  
Research Topic:      Neuroscience and Music  
Research Supervisor: Dr. Shinya Fujii, Dr. Atsuhiko Aoyama  
GPA:                      3.71
- 2017 – 2020        **Faculty of Environment and Information Studies, Keio University**  
**Bachelor's-Master's Four-Year Integrated Education Program**  
**Excellent Graduation Project**  
Research Topic:      Neuroscience and Music  
Research Supervisor: Dr. Shinya Fujii, Dr. Atsuhiko Aoyama  
GPA:                      3.86

## WORK/VOLUNTEER EXPERIENCES

---

- 2021.02 – Present    **Research Assistant**  
Sony Computer Science Laboratory. Supervised by Dr. Shinichi Furuya.
- 2018.12 – Present    **Engineer**  
Freelance. Experienced as neuro-engineer at Sandbox Inc. (2018.12–2021.04) and AI competition engineer at Proospace Inc.(2019.02 – 2019.07).
- 2017.07 – Present    **Translator**  
Freelance
- 2021.04 – 2022.04    **President**  
Society for Young Researchers in Neuroscience. Staff since April 2018.
- 2020.10 – 2021.03    **Paid Research Intern**  
International Research Center for Neurointelligence, University of Tokyo.  
Supervised by Dr. Tatsuya Daikoku.
- 2019.12 – 2020.06    **Writer**  
Techflyer Inc.
- 2018.02 – 2020.04    **Research Intern**  
NTT Communication Science Laboratories. Supervised by Dr. Makio Kashino.

## AWARDS

---

- 2021 **SFC STUDENT AWARD**  
Keio University [Outstanding extracurricular activity, top 0.08% of all students in 5 faculties at Keio SFC]
- 2020 **Gold Prize**  
Online Conference, Keio SFC Academic Society
- 2020 **Excellent Graduation Project**  
Faculty of Environment and Information Studies, Keio University [top 13%]
- 2020 **Given “Likes” (9th place)**  
The 43rd Annual Meeting of the Japan Neuroscience Society
- 2019 **Student Paper Award (3rd Prize)**  
2019 IEEE 1st Global Conference on Life Sciences and Technologies
- 2018 **Abe Research Award for Young Researchers (Nominated)**  
The 57th Annual Conference of Japanese Society for Medical and Biological Engineering

## PUBLICATIONS

---

**Bold indicates me, underscore indicates corresponding author**

- Cheung, V.K.M., **Sakamoto, S.** (accepted) Separating Uncertainty from Surprise in Auditory Processing with Neurocomputational Models: Implications for Music Perception. *The Journal of Neuroscience*
- Sakamoto, S.**, Aoyama, A. “Neural Oscillations and Networks in Processes Specific to Auditory Imagery”. *Under Review*. PsyArXiv: <https://psyarxiv.com/ny2zv>
- Sakamoto, S.**, Kobayashi, A., Matsushita, K., Shimizu, R., & Aoyama, A. (2019) “Decoding Relative Pitch Imagery Using Functional Connectivity: An Electroencephalographic Study”, in *Proceedings of 2019 IEEE 1st Global Conference on Life Sciences and Technologies (LifeTech)*, vol. 1, pp. 48-49.
- Kawabata, M., Koyama, Y., **Sakamoto, S.**, Sato, M., Sato, Y., Takagi, S., Nagano, M., Misu, T., Yagi, S., & Yamashita, A. (2019). *2019 nenndo jigenn kenkyuukai jisshi houkoku noukagaku wakate no kai dai 11 kai gasshuku “Wakate Kenkyuusha Ni Muketa Recucha & Wa-kushoppu Gasshuku ~Shinkei Katsudou Ga Kinou Wo Umu Mekanizumu No Tankyuu, Rironn No Jissenn to Ouyou~”* [Report on the 2019 Symposium, The 11th Symposium by Society for Young researchers on Neuroscience "Lecture & Workshop Symposium for Young Researchers: Exploring Function-related Neural Mechanisms and Practice and Application of its Theory]. *The Brain & Neural Networks.*, vol. 26 (3), pp. 105-109.
- Kobayashi, K., **Sakamoto, S.**, Sato, M., Sato, Y., Sugimoto, S., Nakata, T., Noyama, T., & Yamashita, A. (2021). *2021 nenndo jigenn kenkyuukai jisshi houkoku noukagaku wakate no kai dai 13 kai gasshuku “Wakate Kenkyuusha Ni Muketa Recucha & Wa-kushoppu Gasshuku ~Seitai Jouhou No Hikari Keisoku, Sousa Fijutu To Jinkou Chinou Ni Your Shinkei Mekanizumu No Rikai Oyobi Jissen~”* [Report on the 2021 Symposium, The 13th Symposium by Society for Young researchers on Neuroscience "Lecture & Workshop Symposium for Young Researchers: Understanding and Implementing the Neural Mechanisms by Optical Imaging and Artificial Intelligence]. *The Brain & Neural Networks.*, vol. 28 (2), pp. 103-108.

## CONFERENCE PRESENTATIONS AND OTHERS

---

### TALKS

- Sakamoto, S.,** Matsushita, K., Kobayashi, A., Shimizu, R., & Aoyama, A. (2021). Oscillatory activity in multiple neural processes related to auditory imagery. Talk presented at *ICMPC16-ESCOM11 (International Conference on Music Perception and Cognition, European Society for the Cognitive Sciences of Music)*. Online.
- Sakamoto, S.** (2020). Oscillatory activity in multiple neural processes related to auditory imagery. Invited talk presented at Cognitive Developmental Robotics Lab, International Research Center for Neurointelligence, The University of Tokyo.
- Sakamoto, S.,** Kobayashi, A., Matsushita, K., Shimizu, R., & Aoyama, A. (2020). *Choukaku Souki No Shinkei Shori Ni Kannsuru Ritsudou No Kaiseki* [Oscillatory analysis related to neural processes of auditory imagery]. Talk presented at the the 29th Workshop on Multimodal Brain Information Technology, Japanese Society for Medical and Biological Engineering. Online.
- Sakamoto, S.** (2020). Neural Oscillations Related to Auditory Imagery and Neural Representations of Imaged Sound. Talk presented at the *Online Conference, Keio SFC Academic Society*. Online.
- Sakamoto, S.,** Kobayashi, A., Matsushita, K., Shimizu, R., & Aoyama, A. (2019). Decoding Relative Pitch Imagery Using Functional Connectivity: An Electroencephalographic Study. Talk presented at the *2019 IEEE 1st Global Conference on Life Sciences and Technologies*. Osaka, Japan.
- Watanabe, N., **Sakamoto, S.,** & Aoyama, A. (201). *Ketsugouon ni Chakumoku Shita Waon ni Kannsuru Noujouhoushori no Kentou* [Investigating Neural Processing of Chords Focusing on Combination Tones]. Talk presented at the 21st Application of Multimodal Neural Information Symposium in Japanese Society of Medical and Biological Engineering. Yokohama, Japan

### POSTERS

- Sakamoto, S.,** Matsushita, K., Kobayashi, A., Shimizu, R., & Aoyama, A. (2021). Neural Oscillation Related to Multiple Subprocesses in Auditory Imagery. Poster presented at *The 44th Annual Meeting of the Japan Neuroscience Society*. Kobe, Japan.
- Sakamoto, S.,** Aoyama, A. and Fujii, S. (2021). Uncertainty Resolution and Anticipation of Pleasure in Chord Progression: An EEG Study. Poster presented at *Neurosciences and Music VII*. Online.
- Sakamoto, S.,** Aoyama, A. and Fujii, S. (2020). Electroencephalographic Activity While Anticipating Uncertainty Resolution in Music. Poster presented at *The 43rd Annual Meeting of the Japan Neuroscience Society*. Online.
- Sakamoto, S.,** Kobayashi, A., Matsushita, K., Shimizu, R. and Aoyama, A. (2019). Classification of electroencephalographic oscillations during relative pitch imagery. *Society for Neuroscience, 2019*. Chicago, IL
- Sakamoto, S.,** Kobayashi, A., Matsushita, K., Shimizu, R., & Aoyama, A. (2019). Classification of Electroencephalogram during Pitch Imagery based on Relative Pitch Change. Poster presented at *The 58th Annual Conference of Japanese Society for Medical and Biological Engineering*. Okinawa, Japan.
- Sakamoto, S.,** Matsushita, K., Kobayashi, A., Shimizu, R., & Aoyama, A. (2018). Classification of EEG data during imagery of higher and lower pitched sounds. Poster presented at *The 41st Annual Meeting of the Japan Neuroscience Society*. Kobe, Japan.
- Kobayashi, A., **Sakamoto, S.,** Matsushita, K., Shimizu, R., & Aoyama, A. (2018). Classification of EEG data during imaging higher and lower pitched sounds using machine learning. Poster

Presented at *The 57th Annual Conference of Japanese Society for Medical and Biological Engineering*. Sapporo, Japan. (Presenter)

## SCHOLARSHIPS

---

Scholar, Nakajima Foundation. 2022- [ $<10\%$  acceptance rate; partial tuition and living expenses]  
GAO Scholar, Keio University. 2020-2022 [top 1.5%; full tuition for master's course]

## GRANTS

---

**Total: 2344,300 JPY, roughly 20,500 USD / 15,500 GBP / 26,500 CAD**

### *AS A PERSONAL RESEARCHER*

Total: 894,300 JPY

Taikichiro Mori Memorial Research Grants. “*Ongaku Choushu no Kitai ni Kansuru Shinkei Ritsudou to Sono Jikan Hendou* [Neural oscillations and temporal dynamics related to expectation during musical listening]”. 210,000 JPY. 2021.

Keio SFC Eccentric Research Program. “*Kandou suru Ongaku no Himitsu: ‘muzu-muzu kan’ no kaiketsuni kannsuru nouha seibunn* [The secret of pleasurable music: neural components related to the resolution of ‘tingle’]”. 150,000 JPY. 2021.

Yamagishi Student Project Support Program. “*Soukion no Picchi ni tokuiteki na Shinkei Katsudou no Doutei oyobi Tokutei* [Specification of neural activity related to pitch of imaged sound]”. 150,000 JPY. 2020.

Incentive to Study and Conduct Research Through SFC Education Promotion Foundation. “*Soukion no Soutaiteki Picchi Henka ni Tokuiteki na Shinkei Ritsudou no Doutei to Sono Shikibetu* [Identification and classification of neural oscillations specific to relative pitch change of imaged sound]” 210,000 JPY. 2019.

Incentive to Study and Conduct Research Through SFC Education Promotion Foundation. “*Seiri Shihyou, Noukinou Keisoku wo Mochiita Ongaku no Raudonesu to Namidakann no Kankei no Kaimei* [Revealing the relationship between musical loudness and feeling of tears using psychophysiological measures and neural measurement]”. 160,000 JPY. 2018.

Keio SFC Academic Society. “*Dai 57 kai Nihon Seitai Ikou Gakkai Taikai ni Okeru ‘Kikai Gakushuu wo Mochiita Kouonn, Teionn Soukiji no Nouha Deta no Bunrui’ no Kenkyuu Happyo* [Presentation of ‘Classification of EEG data during high- and low-pitch imagery using machine learning’ at the 57th Annual Conference of Japanese Society of Medical and Biological Engineering]” 14,300 JPY. 2018.

### *AS THE PRESIDENT / STAFF OF SOCIETY FOR YOUNG RESEARCHERS IN NEUROSCIENCE*

Total: 1450,000 JPY

Junior Symposium Grant, Japanese Neural Network Society. “*Wakate Kenkyuusha Ni Muketa Recucha & Wa-kushoppu Gasshuku ~Seitai Jouhou No Hikari Keisoku, Sousa Fijutu To Jinkou Chinou Ni Your Shinkei Mekanizumu No Rikai Oyobi Jissen~* [Lecture & Workshop Symposium for Young Researchers: Understanding and Implementing the Neural Mechanisms by Optical Imaging and Artificial Intelligence]” 250,000 JPY. 2021.

Junior Symposium Grant, Japanese Neural Network Society. “*Wakate Kenkyuusha Ni Muketa Recucha & Wa-kushoppu Gasshuku ~Jikkenn to Rironn ni your Gakushuu no Mekanizumu no Tansaku oyobi Tabunnya tonou Kyoudou Kenkyuu no Keikaku Enshuu~* [Lecture & Workshop Symposium

- for Young Researchers: Exploring the Neural Mechanisms of Learning through Experiments and Theory, Workshop of Collaboration Research Planning]” 200, 000 JPY. 2020.
- Junior Symposium Grant, Japanese Neural Network Society. “*Wakate Kenkyuusha Ni Muketa Recucha & Wa-kushoppu Gasshuku ~Shinkei Katsudou Ga Kinou Wo Umu Mekanizumu No Tankyuu, Riron No Jissenn to Ouyou~* [Lecture & Workshop Symposium for Young Researchers: Exploring Function-related Neural Mechanisms and Practice and Application of its Theory]” 200, 000 JPY. 2019.
- Symposium Grants, Kato Memorial Bioscience Foundation. “*Dai 14 kai Nou Kagaku Wakate No Kai Gasshuku* [14th Workshop Camp of Society for Young Researchers in Neuroscience]”. 300,000 JPY. 2021.
- Symposium Grants, Kato Memorial Bioscience Foundation. “*Dai 13 kai Nou Kagaku Wakate No Kai Gasshuku* [13rd Workshop Camp of Society for Young Researchers in Neuroscience]”. 200,000 JPY. 2020.
- Symposium Grants, Kato Memorial Bioscience Foundation. “*Dai 12 kai Nou Kagaku Wakate No Kai Gasshuku* [12nd Workshop Camp of Society for Young Researchers in Neuroscience]”. 300,000 JPY. 2019.

## TEACHING EXPERIENCE

---

### **INSTRUCTOR OF RECORD**

2017.07 – 2020.02	<b>Private Tutor of High School Math</b>
2018.02 – 2020.02	<b>Private Tutor of Junior High School Math and Physics</b>
2019.10 – 2020.01	<b>Private Tutor of College Math</b>
2020.02 – 2020.06	<b>Private Tutor of Junior High School Math and Physics</b>

### **TEACHING ASSISTANTSHIPS**

2020.09 – 2021.02	<b>Evolution of Music</b> , Keio University (Patrick E. Savage, Ph.D.)
2020.09 – 2021.02	<b>History of Music</b> , Keio University (Patrick E. Savage, Ph.D.)
2018.04 – 2021.07	<b>Calculus</b> , Keio University (Atushi Aoyama, Ph.D.)
2021.04 – 2021.07	<b>Neural Information Science</b> , Keio University (Atsushi Aoyama, Ph.D.)
2019.09 – 2020.02	<b>Neural Information Science</b> , Keio University (Atsushi Aoyama, Ph.D.)
2020.04 – 2020.07	<b>Music and Brain</b> , Keio University (Shinya Fujii, Ph.D.)
2020.04 – 2020.07	<b>Knowledge Processing and Discovery</b> , Keio University (Yasushi Kiyoki, Ph.D. and Atsushi Aoyama, Ph.D.)
2020.04 – 2020.07	<b>Sing</b> , Keio Unievrstity (Yoichi Kitayama)

## SKILLS

---

### **LANGUAGE**

<b>Japanese</b>	Native
<b>English</b>	Fluent.
	TOEFL iBT 111. TOEIC 990, EIKEN Grade1. Graduated from Phillips Academy, a boarding school in Massachusetts.

### **PROGRAMMING**

<b>Proficient</b>	Matlab, Python, Git, LaTeX, UNIX
-------------------	----------------------------------

**Basic** C, R, Mathematica, Haskell, HTML, Javascript, CSS

## **TRAINING EXPERIENCE**

---

2021.08 **fMRI Training Workshop Camp**  
National Institute of Physiological Sciences

2019.09 **Free Energy Principle Workshop Camp**  
National Institute of Physiological Sciences

2017.09 – 2018.07 **Brain Science Training Program**  
RIKEN Center for Brain Science

2018.02 – 2018.04 **NICO2AI School**  
Dwango AI Lab.