

レノキモ ム刀リ 尺モ万モム尺^ニん ノ刀 フムアム刀

Mohammad Ghavami
School of Engineering
London South Bank University

Outline

1. My research experience in Japan
2. Activities undertaken using JSPS schemes
3. Research environments in Japan
4. UK vs. Japan
5. Japanese culture
6. Some things you did not know about Japan!

My research experience in Japan



Activities undertaken using JSPS schemes

- JSPS Post-Doctoral fellowship Kohno Laboratory, Yokohama National University 1998-2000. New research topics:
 - Broadband Antenna
 - Beamforming

Frequency selective broadband beamforming using 2D digital filters M Ghavami, R Kohno VTC2000-Spring. 2000 IEEE 51st Vehicular Technology Conference Proceedings ...	11	2000
Bearing estimation with uniform resolution in broadband environments M Ghavami, R Kohno 2000 International Zurich Seminar on Broadband Communications. Accessing ...	6	2000
Rectangular arrays for uniform wide-band beam forming with adjustable structure M Ghavami, R Kohno Proc. International Symposium on Wireless Personal Multimedia Communications ...	8	2000
Broadband partially adaptive antenna using a new IIR fan filter M Ghavami, R Kohno Proceedings 199 IEEE/IEEJ/JSAI International Conference on Intelligent ...	10	1999
Direction finding of broadband signals for frequency-selective fading channels M Ghavami, R Kohno Gateway to 21st Century Communications Village. VTC 1999-Fall. IEEE VTS 50th ...	2	1999
A new IIR fan filter for broadband beamforming M Ghavami, R Kohno Proc. Int. Conf. Telecommunications (ICT) 2, 71-75	1	1999
Broadband beamforming using fan filter structures with low number of antenna elements M Ghavami, R Kohno 1999 IEEE International Conference on Personal Wireless Communications (Cat ...	4	1999

- Sony Computer Science Laboratories 2000-2002 (Shinagawa Tokyo)



Combined beamforming and space-time block coding with a sparse array antenna R Zaragoza, M Ghavami Proc. International Symposium on Wireless Personal Multimedia Communications ...	2002
Broadband 3-element Receiver Array for Interference Cancellation M Ghavami Communication Systems, Networks and Digital Signal Processing (CSNDSP), 332-335	2002
Combined beamforming and space-time block coding for high-speed wireless indoor communications RH Morelos-Zaragoza, M Ghavami Proc. 4th Int. Symp. Wireless Personal Multimedia Communications (WPMC)	17 2001
Study of the bandwidth adjustment of an unbiased adaptive IIR multitone enhancer M Ghavami, R Kohno IEEE TRANSACTIONS on Fundamentals of Electronics, Communications and ...	2001
A New Wide-Band Smart Antenna Array M Ghavami, R Kohno Proc. International Symposium on Telecommunications (IST)	2001
A Method of Adaptive Beamforming and Space-Time Block Coding for Wireless Indoor Communications R Zaragoza, M Ghavami, R Kohno Sony SRF 2002	2001
An Efficient Design of a Frequency Selective Wide-band Microstrip Smart Antenna M Ghavami Proc. International Conference on Information, Communications and Signal ...	2001
Effect of timing jitter on Hermite function based orthogonal pulses for ultra wideband communications L Michael, M Ghavami, R Kohno Proc. International Symposium on Wireless Personal Multimedia Communications ...	38 2001

Wideband smart antenna theory using rectangular array structures M Ghavami IEEE Transactions on Signal Processing 50 (8), 2143-2151	146 2002
A new broadband uniform accuracy DOA estimator M Ghavami, R Kohno European Transactions on Telecommunications 13 (6), 621-624	3 2002
Combined beamforming and space-time block coding with a sparse array antenna RH Morelos-Zaragoza, M Ghavami The 5th International Symposium on Wireless Personal Multimedia ...	2 2002
A novel UWB pulse shape modulation system M Ghavami, LB Michael, S Hanayama, R Kohno Wireless Personal Communications 23 (1), 105-120	196 2002
An adaptive wideband array using a single real multiplier for each antenna element M Ghavami The 13th IEEE International Symposium on Personal, Indoor and Mobile Radio ...	11 2002
Improvement in the DOA estimation of broadband signals using partially IIR beamformers M Ghavami, R Kohno IEEE transactions on communications 50 (6), 897-901	5 2002
A new adaptive recursive delay filter M Ghavami IEEE Transactions on Circuits and Systems I: Fundamental Theory and ...	2002
Recursive fan filters for a broad-band partially adaptive antenna M Ghavami, R Kohno IEEE Transactions on Communications 48 (2), 185-188	42 2002
Multiple pulse generator for ultra-wideband communication using Hermite polynomial based orthogonal pulses LB Michael, M Ghavami, R Kohno 2002 IEEE Conference on Ultra Wideband Systems and Technologies (IEEE Conf ...	231 2002

- JSPS fellowship in Yokohama National University and the National Institute of Information and Communications Technology, Japan, Summer 2004 (two months).
- JSPS one year research visit of one of my PhD students (Reza Shams Dilmaghani) to Yokohama National University.

Wide-band array antenna M Ghavami US Patent 6,898,442		2005
Ultrawideband-Signals and Systems in Communication Engineering [Book Review] M Ghavami, LB Michael, R Kohno Communications Engineer 3 (1), 46-46		2005
Optimum sequence design and performance evaluation of channel estimation techniques for ultra-wideband systems R Dilmaghani, M Hernandez, M Ghavami, R Kohno IEE Proceedings-Communications 152 (2), 241-245	11	2005

- JSPS funded fellowship from Keio University (Wataru Horie) to King's College London 2007-8 (18 months)

Retransmission scheme with code sense for VSF/DS-UWB ad-hoc network W Horie, Y Sanada, M Ghavami International Workshop on Wireless Ad Hoc Networks	2	2005
---	---	------

- JSPS fellowship in Keio University, Summer 2008 (two months).
- JSPS funded fellowship from Keio University (Haruki Nishimura) to London South Bank University 2010 (6 months)
- JSPS fellowship in Keio University, Summer 2012 (two months).
- JSPS fellowship in Keio University, Summer 2015 (two months).
- PhD examination of three Japanese students in Keio University

- [1] H. Nishimura, M. Inamori, Y. Sanada, and M. Ghavami, 'Non-uniform sampling point selection in orthogonal frequency division multiplexing receiver with fractional sampling', *IET communications*, vol. 5, no. 4, pp. 554–562, 2011.
- [2] M. Inamori, N. Haruki, Y. Sanada, and M. Ghavami, 'Fractional sampling OFCDM with alternative spreading code', in *2008 11th IEEE Singapore International Conference on Communication Systems*, 2008, pp. 1394–1398.
- [3] M. Inamori, H. Nishimura, Y. Sanada, and M. Ghavami, 'Correlated noise cancellation in fractional sampling orthogonal frequency and code division multiplexing with alternative spreading code', *IET communications*, vol. 4, no. 10, pp. 1217–1225, 2010.
- [4] H. Nishimura, M. Inamori, Y. Sanada, and M. Ghavami, 'Precoded transmit path Diversity in FS-OFDM on UWB channels', *Wireless personal communications*, vol. 68, no. 3, pp. 711–725, 2013.
- [5] H. Nishimura, M. Inamori, Y. Sanada, and M. Ghavami, 'Non-uniform sampling point selection in OFDM receiver with fractional sampling', in *2009 IEEE Pacific Rim Conference on Communications, Computers and Signal Processing*, 2009, pp. 837–842.
- [6] E. Sakai, H. Nishimura, M. Inamori, Y. Sanada, and M. Ghavami, 'Low-complexity sampling point selection in OFDM receiver with fractional sampling', in *2010 International Symposium On Information Theory & Its Applications*, 2010, pp. 662–667.
- [7] H. Nishimura, M. Inamori, M. Ghavami, and Y. Sanada, 'Transmit precoding scheme for inter-carrier interference suppression and path diversity in fractional sampling-orthogonal frequency division multiplexing (OFDM)', *IET communications*, vol. 6, no. 15, pp. 2306–2313, 2012.
- [8] A. Sato, S. Uchida, M. Inamori, Y. Sanada, and M. Ghavami, 'Signal detection performance of overlapped FFT scheme with frame summation of adjacent channels', in *2013 IEEE 78th Vehicular Technology Conference (VTC Fall)*, 2013, pp. 1–5.
- [9] H. Nishimura, M. Inamori, Y. Sanada, and M. Ghavami, 'Precoded transmit path diversity in FS-OFDM', in *2011 1st International Symposium on Access Spaces (ISAS)*, 2011, pp. 138–143.
- [10] H. Nishimura, M. Inamori, Y. Sanada, and M. Ghavami, 'Transmit precoding scheme for ICI suppression and path diversity in FS-OFDM', in *2011 8th International Symposium on Wireless Communication Systems*, 2011, pp. 161–165.
- [11] S. Uchida, A. Sato, M. Inamori, Y. Sanada, and M. Ghavami, 'Signal Detection Performance of Overlapped FFT Scheme with Additional Frames Consisting of Non-continuous Samples in Indoor Environment', *Wireless personal communications*, vol. 79, no. 2, pp. 987–1002, 2014.
- [12] S. Uchida, A. Sato, M. Inamori, Y. Sanada, and M. Ghavami, 'Signal Detection Performance of Overlapped FFT Scheme with Additional Frames consisting of Non-continuous Samples in Indoor Environment', *IEICE Technical Report; IEICE Tech. Rep.*, vol. 112, no. 240, pp. 1–8, 2012.
- [13] H. Nishimura, M. Inamori, Y. Sanada, and M. Ghavami, 'Performance of Precoded Transmit Path Diversity in FS-OFDM on Indoor Channels', *IEICE Technical Report; IEICE Tech. Rep.*, vol. 110, no. 41, pp. 9–14, 2010.
- [14] S. Uchida, A. Sato, M. Inamori, Y. Sanada, and M. Ghavami, 'Effect of Frame Size in Signal Detection Performance of Wireless LAN Using Overlapped FFT Scheme', *IEICE Technical Report; IEICE Tech. Rep.*, vol. 113, no. 57, pp. 97–103, 2013.
- [15] H. Nishimura, M. Inamori, Y. Sanada, and M. Ghavami, 'Non-uniform Sampling Point Selection in OFDM Receiver with Fractional Sampling', *IEICE Technical Report; IEICE Tech. Rep.*, vol. 108, no. 250, pp. 21–27, 2008.
- [16] H. Nishimura, M. Inamori, Y. Sanada, and M. Ghavami, 'Precoded Transmit Path Diversity in FS-OFDM', *IEICE Technical Report; IEICE Tech. Rep.*, vol. 109, no. 436, pp. 291–295, 2010.
- [17] T. Kobayashi, Y. Sanada, and M. Ghavami, 'MMSE Equalization Scheme for Fractional Sampling OFDM Receivers in Time Varying Channels', *IEICE Technical Report; IEICE Tech. Rep.*, vol. 109, no. 116, pp. 23–27, 2009.

- JSPS fellowship in Yokohama National University, Summer 2023 (two months).
(Professors: [Hideki Ochiai](#), Ryuji Kohno, Yukitoshi Sanada,)



A reliable antenna array for the 28GHz mmWave band in a 5G massive MIMO communication

ZE Ekolle, R Kohno, M Ghavami

2023 26th International Symposium on Wireless Personal Multimedia ...

4

2023

Huygens principle-based microwave brain imaging through finite difference time domain

M Movafagh, N Ghavami, G Tiberi, S Dudley, H Ochiai, M Ghavami

2023 IEEE Conference on Antenna Measurements and Applications (CAMA), 538-542

2

2023

Research environments in Japan

- Most of the research in Japanese universities is done in **Laboratories**.
- Laboratories in Japan are very **independent** from each other.
- Researchers in one group don't interact with people from other laboratories. They have their own funds and buy their own equipment.
- Each **Sensei** (Japanese academic) is personally responsible for every aspect of the running of their laboratory; from writing grant proposals to registration of the laboratory's waste.
- There are many meetings (even late nights!).
- There is no payment for overtime work.
- Students are 'obliged' to keep working deep into the night because they would feel guilty if they go home earlier than the *Sensei*.



Kohno Laboratory, 1998-2000 JSPS Post-Doc fellowship

Secretaries, Technical assistant



Post-Doc



PhD-3



PhD-2



PhD-1

•
•
•

MSc-2

MSc-1

BSc-4

5-7 students each

UK vs. Japan



• Population	68 million	126 million
• Total Land Area:	244000 sq km	378000 sq km
• Median age of population	40.8 years	47.7 years
• GDP per capita (2026)	\$ 60,000	\$ 36,000
• Hospital beds per 1,000	2.5	13.4
• Number of airports	1043	175

Japanese Culture

Japanese culture is unique from exotic **festivals** and **foods** to traditional art and historical **temples**. Japan is filled with treasures of folk art from beautiful **dishes** and **lacquerware** to delightful **porcelain dolls**.

Festivals and cultural events are deeply rooted and observed in Japan. Some of the most well-known festivals mark the changing of the seasons.

The **cherry blossom festival** celebrates the day of spring.



Japanese Culture

In May, **boys' day** festivals now called children's day is a joyful spectacle as colourful flying carp banners are flown.



Japanese Culture

Japan is filled with historical places and religious artefacts. Stone monuments of **Buddha statues** and lanterns fill the mountain side of temples and shrines.



The Great Buddha of Kamakura



Little Buddha statues at Miyajima, Japan

Japanese Culture

Japan is a treasure-trove of **delectable food** and finely hand-crafted dishes.

The Japanese are well known for their hand-crafted **ceramic dishes** to stunning lacquer bowls, plates, bento box and trays.

Japanese dishes are well beloved for their high quality and intricate craftsmanship.



Japanese Culture

The devotion and appreciation of traditional art flourishes throughout Japan from schools of **tea ceremony (chanoyu)** and **flower arrangement (ikebana)** to **bonsai**, **sumo** and **performing theatre arts**.



Some things you did not know about Japan!

- The average delay of Japanese trains is 18 seconds.
- In Japan, people don't have signatures – they have their own seal. Known as Hanko, the seal is typically your name translated into Kanji characters and are made from silk or plant-based paste.
- The number four ('shi') is widely avoided in Japan since it sounds too similar to the Japanese word for death.
- A seemingly weird thing in Japan is the lack of public trash cans. The Japanese always clean up after themselves. Even if that means carrying garbage home!
- Tipping is not common in restaurants, If you stay in a traditional Japanese inn, it is customary to pay gratuity.
- More than 3.5 million passengers go through Shinjuku Station every day.
- Young Japanese women don't know how to wear kimonos, so they take classes about it.
- Grown men still read comic books.

