

KENGO ICHIKI

市來 健吾

(kengoichiki@gmail.com)

I worked in both Academia and IT company for 10+ years respectively.

- **Researcher** (Physicist) : April 1997 – January 2009
- **Engineer** (Programmer) : May 2009 – May 2023

RESEARCH EXPERIENCE

I studied in theoretical physics and got Ph.D. in 1997. Since then til January 2009, I had been working as a research scientists on theoretical and computational physics.

Education

- B.Sc., Physics, Tohoku University (March 1992)
- M.Sc., Physics, Tohoku University (March 1994)
- Ph.D., Physics, Tohoku University (March 1997)

Awards

- Fellowship of the Japan Society for the Promotion of Science
(April 1996 – March 1998)
- Fellowship of the Japan Society for the Promotion of Science
(April 1998 – March 2001)

Experience

- **Kyoto University, Dept. Human Enrivonm. (Physics),**
Kyoto, Japan
Postdoctoral fellow (supervisor: Hisao Hayakawa)
(April 1997 – September 1997)
- **California Institute of Technology, Chemical Engineering,**
Pasadena, CA, USA
Postdoctoral scholar (supervisor: John F. Brady)
(September 1997 – September 1999)
- **Kyoto University, Dept. Human Enrivonm. (Physics),**
Kyoto, Japan
Postdoctoral fellow (supervisor: Hisao Hayakawa)
(October 1999 – March 2001)
- **University of Twente, Applied Physics,**
Enschede, the Netherlands
Postdoctoral fellow (supervisor: Detlef Lohse)
(May 2001 – April 2002)

- **The Johns Hopkins University, Mechanical Engineering,**
Baltimore, MD, USA
Postdoctoral fellow (supervisor: Andrea Prosperetti)
(May 2002 – August 2004)
- **The University of Western Ontario, Chemistry,**
London, ON, Canada
Postdoctoral fellow (supervisor: Styliani Consta)
(September 2004 – September 2006)
- **The University of Western Ontario, Applied Mathematics,**
London, ON, Canada
Postdoctoral fellow (supervisor: David J. Jeffrey)
(November 2006)
- **University of Alberta, Mechanical Engineering**
and **National Institute for Nanotechnology,**
Edmonton, AB, Canada
Research Associate (supervisor: Andriy Kovalenko)
(February 2007 – January 2009)

Publication List

These are representative papers:

- **K.Ichiki**, A.E.Kobryn, and A.Kovalenko, arXiv:1302.0461
“Resistance functions for two unequal spheres in linear flow at low Reynolds number with the Navier slip boundary condition”
- **K.Ichiki**, A.E.Kobryn, and A.Kovalenko, J. Comput. Theor. Nanosci. (2008) **5**(10), pp. 2004-2021 (DOI:10.1166/jctn.2008.1007)
”Targeting Transport Properties in Nanofluidics: Hydrodynamic Interaction among Slip Surface Nanoparticles in Solution”
- **K.Ichiki** and S.Consta, J. Phys. Chem. B (2006) **110**(39), pp.19168 - 19175 (DOI:10.1021/jp062222a)
“Disintegration mechanisms of charged aqueous nanodroplets studied by simulations and analytical models”
- **K.Ichiki** and A.Prospereetti, Phys. Fluids (2004) **16** 2483-2496 (DOI:10.1063/1.1734951)
“Faxén-like relations for a non-uniform suspension”
- **K.Ichiki**, J. Fluid Mech. (2002) **452**, pp. 231-262 (DOI:10.1017/S0022112001006735)
“Improvement of the Stokesian Dynamics method for systems with finite number of particles”
- **K.Ichiki** and J.F.Brady, Phys. Fluids (2001) **13** 350-353 (DOI:10.1063/1.1331320)
“Many-body effects and matrix-inversion in low-Reynolds-number hydrodynamics”

Full publication list is at

- <https://kichiki.github.io/physics/papers.html>

Research Interests

My research interests (in those days) were

- Theory of hydrodynamics in low Reynolds number flows (nanofluidics)
- Development of computational algorithm for hydrodynamic interaction of particles in viscous fluid called Stokesian dynamics
- Application of Fast Multipole Method to Stokesian dynamics
- Formulating and solving exact solution of hydrodynamic interaction between two particles in low Reynolds number flow
- Molecular dynamics for charged nano droplets

ENGINEER EXPERIENCE

I worked at ZENKEI corporation (<https://zenkei.com>) from **May 2009** to **May 2023** as a research engineer (programmer) at the beginning and as the chief in 5 years. It is a small company with 14 members in total. In 2023, I was leading two teams (4 + 2 people).

Due to company restructuring at the end of April 2023, the company closed Research & Development division, which I am the head. Then, I left the company.

Role (in 2023)

- Team Leader of Research & Development team (4 members)
- Team Leader of 3D Project team (2 members)

Work Projects

- Re-implementation of the image conversion engine (2009-2010)
- Development of panorama stitching program (2009-2011)
- Prototyping 3D 360 camera device (2010-2015)
- Building AI model for VR player generation (2017-2018)
- Application of AI to our services (data analysis, MLOps, etc) (2018-2023)
- Development of panorama-to-3D creation system (manually) (2019-2023)

Public Projects

- Lecturer for “**AI SEMINAR**” (2018)
- Organiser of “**AI FORUM**” (2019 to date)

Patents

- WO2016/208539 (Japan and China)
“Binocular stereoscopic image providing method, distribution device, and camera unit”
(<https://patents.google.com/patent/JPW02016208539A1/en>)

Programming Skills

- C and C++
- C# for .NET framework
- Python
 - TensorFlow
 - PyTorch

PERSONAL PROJECTS

Open Source Projects

- WaoN project (<https://github.com/kichiki/WaoN>)
- RYUON project (<https://kichiki.github.io/ryuon/>)

(GitHub account: <https://github.com/kichiki>)

Books (self publishing)

- “*Music and Math – music transcription for dummies*” (2020) in Japanese
<https://www.amazon.co.jp/dp/B0C7JFHTDF>
– This is backstory of my open source project “WaoN”
- “*Exact Computation*” (2021) in Japanese
<https://www.amazon.co.jp/dp/B0C7JCBC6P>
– This is backstory of “RYUON - twobody”
and my paper <https://arxiv.org/abs/1302.0461>.
- “*ZAM - ZENKEI AI FORUM, Volume 1*” (2021) in Japanese
<https://www.amazon.co.jp/dp/B0BHLFMXJH>
Summary of the event “ZENKEI AI FORUM”
- “*ZAM - ZENKEI AI FORUM, Volume 2*” (2022) in Japanese
<https://www.amazon.co.jp/dp/B0BHG8GJDR>
Summary of the event “ZENKEI AI FORUM”
- “*Essay: Music and Math – Podcast macht frei*” (2023) in Japanese
<https://www.amazon.co.jp/dp/B0C7JG3GYS>
– This is transcription of my personal podcast
<https://podcasters.spotify.com/pod/show/music-and-math>

YouTube & Podcasts

- “HELLO! AI FORUM” (former “ZENKEI AI FORUM”)
<https://www.youtube.com/@hello-ai-forum>
<https://hello-ai-forum.github.io/>
- “Music and Math” podcast
<https://podcasters.spotify.com/pod/show/music-and-math>