Dr. Jon Yue Zhang Xu

Graduate School of Information Sciences, Tohoku University, Japan.

jyXXz.xu@tohXXoku.ac.jp (remove the XX's). • Citizenship: Australian.
Place of Birth: Guangzhou, China. Webpage: https://sites.google.com/view/jonxu88/home.

Expertise: Mathematical reasoning, research and education. Ability to understand and improve upon highly technical concepts, and explain them to various types of audiences.
Currently looking for opportunities outside academia, in particular, machine learning and AI, more generally, programming and software development.

Professional Experience and Education

- **Graduate School of Information Sciences, Tohoku University** **Sendai, Japan**
  Postdoctoral Fellow *June 2019 – Ongoing*
  (日本学術振興会外国人特別研究員)
  - Research topic 'Combinatorial study of Schubert cells and Schubert varieties'. Roughly speaking, my research attempts to understand the maximal size of an intersecting family of substructures, and given such a family, attempt to determine its structure.
- **School of Mathematics and Statistics, University of Melbourne** **Melbourne, Australia**
  Ph.D. (Mathematics) and casual tutor (teaching assistant) *September 2012 – June 2019*
  - Doctor of Philosphy (Mathematics). Thesis Title: *Chevalley Groups and Finite Geometry*. Thesis completed May 2018. Supervised by Prof. Arun Ram (University of Melbourne) and A/Prof. John Bamberg (University of Western Australia). Funded by an Australian Postgraduate Award. The thesis determines the thickness of Schubert cells, as well as realises certain classes of ovoids as points of a flag variety.
  - Casual tutoring: 4 semesters of 3rd year Complex Analysis, 2 semesters of 3rd year Algebra, 5 semesters of 2nd year Real Analysis, 3 semesters of 2nd year Group Theory and Linear Algebra, 6 semesters of 1st year Linear Algebra, and many other courses. On average, they would involve 8–20 work hours a week, 40 weeks a year. Duties included classroom teaching, marking assignments, marking exams, and consultations. The classroom teaching would often involve 20+ students in teams of 3 or 4 in solving sets of problems. I would tour the classroom and aimed at having productive dialogues with the students.
- **School of Mathematics and Statistics, University of Sydney** **Sydney, Australia**
  B.Sc (Hons) (Advanced Mathematics) and casual tutor (teaching assistant) *2007 – 2012*
  - Bachelor of Science (Advanced Mathematics) with first class honours. Thesis Title: *BN-Pairs, Buildings, Generalized Polygons and the Feit-Higman Theorem*. Supervised by A/Prof. James Parkinson.
- Other things: Volunteered for various university outreach and club activities, worked as a cashier at a newsagency, a volunteer for meals on wheels (delivering meals to the elderly and disabled), worked as a self-employed mathematics/science tutor, worked at a tutoring center (an equivalent of a cram school (塾) in Japan).

Computer Skills

- **Programming Languages (in decreasing order of working proficiency):** LaTeX, Python, MAGMA, HTML, CSS, Matlab, Sage, C, R, Excel.
- **Github:** `https://github.com/jonxu88`

Languages

- **English:** Native
- **Japanese, Cantonese, Mandarin:** Upper Intermediate general proficiency/Conversational

- **French:** Intermediate reading comprehension proficiency.

Other

- **Brazilian Jiu Jitsu:** Blue Belt under Professor Alexandre Santos (700+ hours martial arts training since January 2017).

Referees

- **Professor Akihiro Munemasa** Email: munemasa@math.is.tohoku.ac.jp
- **Associate Professor Hajime Tanaka** Email: htanaka@tohoku.ac.jp
- **Professor Arun Ram** (PhD Supervisor) Email: aram@unimelb.edu.au
- **Associate Professor John Bamberg** (PhD Cosupervisor) Email: john.bamberg@uwa.edu.au
- **Dr. Nora Ganter** (Teaching) Email: nganter@ms.unimelb.edu.au

Papers and Preprints

- with John Bamberg and Arun Ram: *The thickness of Schubert cells as incidence structures* (published in the Journal of the Australian Mathematical Society)

Funding

- KAKENHI Grant-in-Aid for JSPS Fellows for the project 'Algebraic and combinatorial study of Schubert cells and Schubert varieties'. 2,300,000 JPY for the period 24/07/2019 – 31/03/2021. Project URL: https://kaken.nii.ac.jp/grant/KAKENHI-PROJECT-19F19715/
- Australian Postgraduate Award for living expenses during PhD program. Approximately $24,000 AUD per year from Sep 2012 to Mar 2016.
- Full funding to attend about 80% of the conferences above, and more than half funding for the other 20%. Most of this funding was conditional on giving a talk. In total, this is approximately $15,000 AUD of conference attendance funding from Sep 2012 to Dec 2016.

Contributed talks/seminars/visits

- Various conferences/visits/talks cancelled due to Coronavirus (Jan 2020 - Ongoing)
- Symmetries of Discrete Objects in Rotorua, New Zealand (February 2020)
- Visited Yuta Watanabe, Ube National College (宇部工業高等専門学校) (3 Weeks, Jan 2020).
- Tohoku University, Combinatorics Seminar, Graduate School of Information Sciences (Aug 2019). Talk title: "Erdős–Ko–Rado type theorems."
- University of Melbourne, Discrete Structures Reading Group, (May 2019, 4 talks), Theme of talks: "Erdős–Ko–Rado type theorems."
- Tohoku University, Combinatorics Seminar, Graduate School of Information Sciences (Jan 2018). Talk title: "Chevalley Groups and Finite Geometry."
- AustMS Annual Meeting (Dec 2017), Macquarie University. Talk title: "Chevalley Groups and Finite Geometry."
- Future Directions in Representation Theory (Dec 2017), Sydney University. Talk title: "Chevalley Groups and Finite Geometry."
- Completion Seminar, University of Melbourne (Dec 2017). Talk title: "Chevalley Groups and Finite Geometry."
- AustMS Annual Meeting (Dec 2016), Australian National University. Talk title: "The Thickness of Schubert Cells."
- 34th Annual Victorian Algebra Conference (Nov 2016), La Trobe University. Talk title: "The Thickness of Schubert Cells." Winner of the Gordon Preston Prize for best student talk (Prize: $ 200).
- Lie Theory and Representation Theory Workshop (Aug 2016), The University of Cologne. Talk title: "The Thickness of Schubert Cells"
- International Conference on Representations of Algebras XVII (Aug 2016), Syracuse University. Talk title: "The Thickness of Schubert Cells."
- 33rd Annual Victorian Algebra Conference (Dec 2015), Western Sydney University. Talk title: "Schubert varieties and finite geometry."
- AustMS Annual Meeting (Sep 2015 – Nov 2015), Flinders University. Talk title: "Schubert varieties and finite geometry."
- 8th Australia New Zealand Mathematics Convention 2014 (8 Dec 2014 – 12 Dec 2014), University of Melbourne. Talk title: "Schubert calculus and finite geometry."
- RIMS Project 2014 on Geometric Representation Theory (20 Jul 2014 – 2 Aug 2014), Research Institute for Mathematical Sciences, Kyoto University. Poster session: "Schubert varieties and finite geometry."
- 31st Annual Victorian Algebra Conference (28 – 29 Nov 2013) University of Melbourne. Talk Title: "Classical and Quantum Schur-Weyl duality."

- Melbourne University Mathematics Masters Seminar (23 Oct 2013) Talk Title: "Classical and Quantum Schur-Weyl duality."
- 57th Annual AustMS meeting(Sep 2013 – Oct 2013) University of Sydney. Talk Title: "Chevalley Groups and Finite Geometry".
- Melbourne University Mathematics Society (23 Aug 2013) Talk Title: "Jedi Training: What it's like to be a postgraduate mathematics student."
- 2nd Australian Mathematical Sciences Student Conference (15 – 17 Jul 2013) Talk Title: " 'Algebraic' finite geometry."
- University of Western Australia Student's Seminar (3 May 2013) Talk Title: "Days of Our Lives: What it's like to be a postgraduate pure mathematics student."
- University of Western Australia Groups and Combinatorics Seminar (8 Mar 2013) Talk Title: "Generalised n-gons and the Feit-Higman Theorem."
- Postgraduate visitor: University of Western Australia (Jan – Jun 2013).
- 30th Annual Victorian Algebra Conference (29 – 30 Nov 2012) Royal Melbourne Institute of Technology. Winner of the Gordon Preston Prize for best student talk (Prize: $ 200). Talk Title: "Generalised n-gons and the Feit-Higman Theorem."
- Melbourne University Mathematics Postgraduate Seminar (2 Nov 2012) Talk Title: "Generalised n-gons and the Feit-Higman Theorem."

University Classes Tutored

- 3rd year Complex Analysis tutor, Department of Mathematics and Statistics, University of Melbourne (Aug 2015 – Nov 2015, Mar 2018 – Jun 2018, Aug 2018 - Nov 2018, Mar 2019 – Jun 2019)
- 2nd year Real Analysis (a first proofs course) tutor at the Department of Mathematics and Statistics, University of Melbourne (Mar 2014 – Jun 2014, Mar 2015 – Jun 2015, Mar 2018 – Jun 2018, Aug 2018 - Nov 2018, Mar 2019 - Jun 2019).
- 3rd year Algebra tutor, School of Mathematics and Statistics, University of Melbourne (Mar 2017 – Jun 2017)
- 2nd year Group Theory and Linear Algebra tutor (Aug 2014 – Nov 2014, July 2017 – Nov 2017, Aug 2018 - Nov 2018)
- 2nd year Vector Calculus, School of Mathematics and Statistics, University of Melbourne (July 2017 – Nov 2017)
- 1st year Accelerated Mathematics 1 tutor (Mar 2017 – Jun 2017)
- Linear Algebra tutor at the Department of Mathematics and Statistics, University of Melbourne (Aug 2013 – Oct 2013, Aug 2014 – Nov 2014, 9 Jan 2017 – 13 Feb 2017, 9 Jan 2018 – 13 Feb 2018, 9 Jan 2019 – 13 Feb 2019).
- Mathematical Methods 1 tutor at the Department of Mathematics and Statistics, University of Western Australia (Mar 2013 – Jun 2013).
- 3 Unit Mathematics bridging course tutor, University of Sydney (Feb 2012).
- 1st year Differential Calculus, 1st year Linear Algebra, and 1st year Mathematical Modelling tutor at the Department of Mathematics and Statistics, University of Sydney (Mar 2011 – Jun 2012).