PAUL SAMUEL PADASAS IGNACIO

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Education
- *Ph.D., Mathematics*, 2019, University of Iowa, USA
- *M.S., Mathematics*, 2016, University of Iowa, USA
- *M.S., Mathematics*, 2013, University of the Philippines Baguio, Philippines
- *B.S., Mathematics, cum laude*, 2010, University of the Philippines Baguio, Philippines

Professional History

University of the Philippines Baguio, Baguio City, Philippines

Appointment History

— Assistant Professor 5	January 2014–Present
— Assistant Professor I	June 2013–December 2013
— Instructor I	June 2011–May 2013
— Lecturer I	June 2010–March 2011

Courses Taught

Graduate : Abstract Algebra II (Rings, Fields, and Galois Theory), Graduate Seminar
Undergraduate : College Algebra and Plane Trigonometry, Calculus for Biology and Economics, Elementary Analysis I, II, Elementary Statistics, Mathematical Statistics, Introduction to p-adic Analysis, Introduction to Algebraic Topology

Administrative Positions Held

— Coordinator, Learning Resource Center	June 2013–May 2014

University of Iowa, Iowa City, IA, USA

— Graduate Teaching Assistant	Fall '16,'18, Spring '17,'18,'19

Mathematical Sciences Research Institute, Berkeley, CA, USA

— Graduate Research Assistant	2018 MSRI-UP Research Experience for Undergraduates: Mathematics of Data Science, June 16-July 29, 2018

Colegio de Dagupan, Dagupan City, Philippines

— Research Statistician	July 2010–May 2011

Research Interests

– Applied Algebraic Topology, Persistent Homology, Network Analysis, Data Science

Peer Reviewed Publications (Name in bold indicates lead authorship)

1. **Ignacio, P.S.**, Dunstan, C., Escobar, E., Trujillo, L., Uminsky, D., *Classification of Single-lead Electrocardiograms: TDA informed Machine Learning*, in Proceedings 2019 18th IEEE International Conference on Machine Learning and Applications (ICMLA), Baton Roca, Florida, USA, December 16-17, 2019, pp. 1241-1246.
2. **Ignacio, P.S.**, Darcy, I., *Tracing Patterns and Shapes in Remittance and Migration Networks Via Persistent Homology*, EPJ Data Science, 8(1), pp. 1-25 (2019)
3. **Ignacio, P.S.**, Addawe, Nable, J., *P-adic Qth Roots Via Newton-Raphson Method*, Thai Journal of Mathematics 14(2), pp. 417-429, (2016)
4. **Ignacio, P.S.**, *On the Square and Cube Roots of p-adic Numbers*, Journal of Mathematical and Computational Science, Vol 3. No. 4, pp. 993-1003 (2013)
5. **Ignacio, P.S.**, Addawe, J., Alangui, W., Nable, J., *Computation of the Square and Cube Roots of p-adic Numbers Via Newton-Raphson Method*, Journal of Mathematics Research, Vol. 5, No. 2 (2013), pp. 31-38

Talks and Other Presentations

Invited Talks

– Improving Bottleneck Computations in Topological Data Analysis, National Diversity Conference, Society for the Advancement of Chicanos and Native Americans in STEM, Honolulu, Hawaii, USA, October 30 - November 2, 2019
– Classification of Short ECG Readings via Topological Time Series Analysis, 5th Topological Data Analysis School, Centro de Investigación en Matemáticas, Guanajuato, Mexico, November 19-23, 2018

Conference Talks

– *Classification of Single-lead Electrocardiograms: TDA informed Machine Learning*, 18th IEEE International Conference on Machine Learning and Applications, Baton Roca, Florida, USA, December 16-19, 2019
– *Can topology-based features improve diagnosis of Atrial Fibrillation?*, 9th International Congress on Industrial and Applied Mathematics, Valencia, Spain, July 15-19, 2019
– *Tracing Remittance Flows via Persistent Homology*, 9th International Congress on Industrial and Applied Mathematics, Valencia, Spain, July 15-19, 2019
– *Detection of Atrial Fibrillation in Electrocardiograms via Persistent Homology-based Features*[1], w. Christopher Dunstan, Esteban Escobar, Luke Trujillo, and David Uminsky, Joint Mathematics Meetings of AMS and MAA, Baltimore, Maryland, USA, January 16-19, 2019
– Tracing Patterns in Migration Networks via Persistent Homology, SACNAS National Diversity in STEM Conference, San Antonio, Texas, USA, October 11-13, 2018

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[1]Presented by co-authors

- *Directed Network Persistent Homology via Cliques*, 38th Philippine-American Academy of Science and Engineering Annual Meeting and Symposium, University of Arizona, USA, April 6-7, 2018
- *Emerging Applications of p-adic Numbers in Bioinformation Systems*, Mathematical Society of the Philippines Annual Convention, Iloilo City, Philippines, May 26-27, 2014
- *Computation of the qth Roots of p-adic Numbers Via Newton-Raphson Method*, 28th Journées Arithmétiques, Grenoble, France, July 1-5, 2013
- *Computation of the Square and Cube Roots of p-adic Numbers Via Newton-Raphson Method*, 7th Annual International Conference on Mathematics, Athens, Greece, June 17-20, 2013
- *On Square and Cube Roots of p-adic Numbers*, Mathematical Society of the Philippines Annual Convention, Puerto Princesa City, Philippines, May 17-18, 2013
- *On the Existence of qth Roots of p-adic Numbers in $\mathbb{Q}_p$*, Mathematical Society of the Philippines CALABARZON Conference, University of Batangas, Batangas, Philippines, May 6, 2013
- *On Some Domain Theoretic Properties of Countable T_0-Alexandroff Spaces*, Mathematical Society of the Philippines Annual Convention, De la Salle Lipa, Lipa City, Philippines, May 18-19, 2012
- *The Directed Subsets of Countable T_0-Alexandroff Spaces*, 19th Summer Institute in the Natural Sciences and Mathematics, University of the Philippines Baguio, Baguio City, April 2, 2012
- *Common Statistical Tools Used in Research*, Faculty Seminar on Research and Publication, Colegio de Dagupan, Dagupan City, September 13, 2010

Poster Presentations

- *Classification of Single-Lead Electrocardiograms: TDA-informed Machine Learning*, w. Christopher Dunstan, Esteban Escobar, Luke Trujillo, and David Uminsky, Young Topologists' Meeting, Laussane, Switzerland, July 22-26, 2019
- *Statistical Analysis and Geographical Clustering of Arrest Data for Los Angeles County*[1], w. Jackson, J., Hooper, C., J., Ofunrein, K., and David Uminsky, Joint Mathematics Meetings of AMS and MAA, Baltimore, Maryland, USA, January 16-19, 2019, **Given Outstanding Poster Award**
- *Detection of Atrial Fibrillation in Electrocardiograms via Persistent Homology-based Features*[2], w. Christopher Dunstan, Esteban Escobar, Luke Trujillo, and David Uminsky, SACNAS National Diversity Conference, San Antonio, Texas, USA, October 11-13, 2018, **Given Outstanding Poster Award**

Other Conferences, Seminars and Workshops Attended

- 34th Summer Conference on Topology and its Applications, Johannesburg, South Africa, July 1-5, 2019
- AMS and MAA Joint Math Meetings, Baltimore, Maryland, USA, January 16-19, 2019
- Modern Math Workshop, Statistical and Applied Mathematical Sciences Institute, San Antonio, Texas, USA, October 10-11, 2018
- International Congress of Mathematicians, Rio de Janeiro, Brazil, August 1-9, 2018
- UI3/ISRC Data Science Institute, University of Iowa, Iowa, USA, June 4-8, 2018

- TGDA@OSU TRIPODS Center Summer School and Workshop, Ohio State University, Ohio, USA, May 14-25, 2018
- Topology, Geometry, and Data Analysis Conference, Ohio State University, Ohio, USA, May 16-20, 2016
- Advances in Quantum and Low-Dimensional Topology, University of Iowa, Iowa, USA, March 11-13, 2016
- The 96th Encounter between Mathematicians and Theoretical Physicists: Geometry and Biophysics, Institut de Recherche Mathématique Avancée, University of Strasbourg and CNRS, Strasbourg, France, September 17-19, 2015
- Civic Engagement: Environmental Initiatives for a Sustainable Future, Fulbright Enrichment Seminar, Los Angeles, California, USA, January 22-25, 2015

Referee Work for WoS/Scopus-listed journals

- Contributions in Discrete Mathematics, 2020.
- International Migration, 2019.
- Inverse Problems, 2019.

Honors and Awards

- Outstanding Teaching Assistant Award, Council on Teaching, University of Iowa, Iowa City, IA, USA, May 2, 2019
- University of the Philippines International Publication Award, 2016, 2019
- Graduated *Cum Laude*, University of the Philippines Baguio, Baguio City, Philippines, March 2010

Grants Awarded

Study and Research Grants

- UP Baguio PhD Incentive Grant, August 2019-July 2020
- University of Iowa, Graduate College Post-Comprehensive Research Award, Fall 2017
- University of Iowa, Graduate College Sumer Fellowship, Summer 2017, 2019
- US Department of State, Fulbright Foreign Student Grant, August 2014 - July 2016
- University of Iowa, College of Liberal Arts and Science Tuition Grant, Fall (2014, 2015), Spring (2015, 2016)
- Commission on Higher Education (Philippines) Faculty Development Program (Phase II) Scholar (MS Mathematics), 2010-2012

Conference Grants

- SUMTOPO 2019 Travel Grant, 34th Summer Conference on Topology and its Applications, Johannesburg, South Africa, July 1-5, 2019
- MSRI Travel Grant, AMS and MAA Joint Math Meetings, Baltimore, Maryland, USA, January 16-19, 2019
- Graduate Student Senate/University of Iowa Graduate College Travel Fund, 5th Topological Data Analysis School, Centro de Investigación en Matemáticas, Guanajuato, Mexico, November 19-23, 2018

- SAMSI Travel Grant, Modern Math Workshop and SACNAS National Diversity in STEM Conference, San Antonio, Texas, USA, October 10-13, 2018
- AMS Travel Grant, International Congress of Mathematicians, Rio de Janeiro, Brazil, August 1-9, 2018
- TGDA@OSU TRIPODS Center Summer School and Workshop, Ohio State University, Ohio, USA, May 14-25, 2018
- Topology, Geometry, and Data Analysis Conference Funding Support, Ohio State University, Ohio, USA, May 16-20, 2016
- Institute of International Education South East Asia Grant, August 12, 2015 - December 31, 2015
- University of the Philippines Baguio Research Dissemination Grant, 7th Annual International Conference on Mathematics, Athens, Greece, 2013
- University of the Philippines System Research Dissemination Grant, 7th Annual International Conference on Mathematics, Athens, Greece, 2013
- Commission on Higher Education (Philippines) Support for Paper Presentation in International Conferences, 28th Journées Arithmétiques, Grenoble, France, 2013
- 28th Journées Arithmétiques Funding Support, Institut Fourier, Grenoble, France, 2013

Organizational Involvement
- Mathematical Society of the Philippines (until 2015)
- American Mathematical Society (until 2019)
- Mathematical Association of America (until 2019)
- Society for the Advancement of Chicanos and Native Americans in STEM (until 2019)
- Society for Industrial and Applied Mathematics (until 2020)

Programming Skills
- Proficient in R, MATLAB, Python and LaTeX.