Jason Vander Woude

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github.com/Dordt-Statistics-Research

──── EDUCATION ────

Joint Ph.D. in Computer Science and Mathematics   Anticipated
University of Nebraska–Lincoln

Bachelor of Science in Engineering   May 2018
Dordt College, Sioux Center, IA   GPA: 3.9 on 4.0 scale
       4.0 in majors
- Electrical Engineering (major)
- Computer Science (major)
- Mathematics (minor)

──── RESEARCH EXPERIENCES ────

Plant Genome Imputation   July 2017 – Present
Dordt College, Sioux Center, IA   Nathan Tintle, Jesse Poland
- Ported a plant genetics imputation algorithm from Java to R to improve usability for researchers
- Improved the algorithm to produce results in way that enables statistical analysis
- Release the improved algorithm (LaByRInth) on GitHub to promote its use in genetics research

Abstract Algebra   May 2017 – September 2017
Dordt College, Sioux Center, IA   Mike Janssen
- Proved a previously conjectured relationship between abstract algebraic objects (ideals of graphs)
- Discovered an equality relation involving these objects that was stronger and more general
- Established means of calculating various metrics of interest regarding these relationships

Genetic Analysis Workshop 20 (GAW20)   November 2016 – June 2017
Dordt College, Sioux Center, IA   Nathan Tintle
- Researched and evaluated the performance of novel gene-based statistical tests of association
- Demonstrated proof of concept for a new data aggregation method using simulated data
- Served as primary programmer and technical support for two groups and lead author for one

E. Coli Gene Activity States   August 2016 – November 2016
Dordt College, Sioux Center, IA   Nathan Tintle
- Conducted exploratory research on modeling E. coli gene activity states using regulatory networks
- Created a modeling process that had potential to be more informative than the current standard
- Produced results used in an NSF-MCB grant proposal to secure funding for further research

──── PUBLICATIONS ────

M. Janssen, T. Kamp, **J. Vander Woude**, "Comparing Powers of Edge Ideals," *Journal of Algebra and Its Applications* accepted Sept. 2018. Available: http://arxiv.org/abs/1709.08701

J. Vander Woude, J. Huisman, L. Vander Berg, J. Veenstra, A. Bos, A. Kalsbeek, K. Koster, N. Ryder, N.L. Tintle, "Evaluating the Performance of Gene-Based Tests of Genetic Association when Testing for

Association between Methylation and Change in Triglyceride Levels," in *Genetic Analysis Workshop 20 (GAW20)*, *BMC Proc.*, vol. 20, suppl. 9, 2018, pp. 50. doi: 10.1186/s12919-018-0124-y

J. Veenstra, A. Kalsbeek, K. Koster, N. Ryder, A. Bos, J. Huisman, L. Vander Berg, **J. Vander Woude**, N.L. Tintle, "Epigenome Wide Association Study of SNP-CpG Interactions on Changes in Triglyceride Levels after Pharmaceutical Intervention: A GAW20 Analysis," in *Genetic Analysis Workshop 20 (GAW20)*, *BMC Proc.*, vol 20, suppl. 9, 2018, pp 58. doi: 10.1186/s12919-018-0144-7

A. Kalsbeek, J. Veenstra, J. Westra, C. Disselkoen, K. Koch, K. McKenzie, **J. Vander Woude**, J. O'Bott, K. Fischer, G.C. Shearer, W.S. Harris, N.L. Tintle, "A Genome-wide Association Study of Red-Blood Cell Fatty Acids and Ratios Incorporating Dietary Covariates: Framingham Heart Study Offspring Cohort," submitted to *PLOS One*.

——— **PRESENTATIONS** ———

Uncertainty and Imputation of Plant Genotypes
Research Presentations at University of Michigan (Biostatistics Department)   July 2018

Cyclic Graphs, Their Edge Ideals, and a Comparison of Powers
Math on the Northern Plains   April 2018

Associating Phenotypic Distributions with Genotypes in Wheat
Research Presentations at Iowa State University (Statistics Department)   June 2017

Symbolic Powers of Ideals
Dordt College Summer Seminar   June 2017

Evaluating the Performance of Gene-Based Tests of Genetic Association between Methylation and Change in Triglyceride Levels
Dordt College Ideafest   April 2017
Math on the Northern Plains   April 2017

——— **ADDITIONAL EXPERIENCE** ———

Teaching Assistant – Calculus I   August 2018 – Present
University of Nebraska–Lincoln

Tutor – Mathematics and Engineering   August 2015 – December 2016
Dordt College, Sioux Center, IA
- Led calculus drop-in sessions by demonstrating the specific techniques in question
- Assisted students studying microprocessors by engaging them in the broad ideas of each chapter
- Coached students taking college algebra through the use of leading questions

Intern – Engineering   Summers 2014 – 2016
Fey Industries, Edgerton, MN
- Designed and developed a semi-automated machine used to aid ergonomic assembly of screwdrivers
- Programmed PLCs for new automation machines and updated code on older machines
- Researched machine vision systems to improve quality of screwdriver screen printing process

———— **HONORS** ————

NSF Graduate Research Fellowship Honorable Mention
Dohrmann Fellowship, University of Nebraska–Lincoln
Distinguished Scholar Award, Dordt College

———— **MEMBERSHIPS** ————

Student Member, IEEE
Student Representative, 2016 Dordt College Engineering Advisory Board

———— **ACTIVITIES** ————

Putnam Competitions (80$^{\text{th}}$ percentile in 2017)
President, IEEE Dordt College Student Branch
ACM Programming Competitions