

# Nicholas Sohre

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<b>Research Interests</b>	Using data-driven and simulation-based methods to enhance Artificial Intelligence and Machine Learning techniques.	
<b>Education</b>	<b>University of Minnesota</b> Ph.D. Student GPA: 4.0	2014 – Present Advisor: Stephen J. Guy
	<b>University of Minnesota</b> Master of Science GPA: 4.0	2014 – 2017 Graduated
	<b>Dordt College</b> Bachelor of Arts in Computer Science GPA: 3.9	2007 – 2011 Graduated

## Selected Publications

### Journal Publications

#### 1. **Dynamic Properties of Successful Smiles**

Nathaniel E Helwig, Nick E. Sohre, Mark R. Ruprecht, Stephen J. Guy, and Sofia Lyford-Pike. "Dynamic properties of successful smiles." *PloS one* 12, no. 6 (2017): e0179708.

#### 2. **Implicit Crowds: Optimization Integrator for Robust Crowd Simulation**

Ioannis Karamouzias, Nick Sohre, and Stephen J. Guy. "Implicit Crowds: Optimization Integrator for Robust Crowd Simulation" *ACM Transactions on Graphics (Proceedings of SIGGRAPH 2017)*.

### Conference Papers

#### 3. **PVL: A Framework for Navigating the Precision-Variety Trade-off in Automated Animation of Smiles**

Nick Sohre, Moses Adeagbo, Nathaniel Helwig, Sofia Lyford-Pike, and Stephen J. Guy. "PVL: A Framework for Navigating the Precision-Variety Trade-off in Automated Animation of Smiles." *Accepted Technical Paper to appear in AAAI 2018*.

#### 4. **Data-Driven Sokoban Puzzle Generation with Monte Carlo Tree Search (Best Student Paper)**

Bilal Kartal, Nick Sohre, and Stephen J. Guy. "Data-Driven Sokoban Puzzle Generation with Monte Carlo Tree Search." *Twelfth Artificial Intelligence and Interactive Digital Entertainment Conference*. 2016.

### Workshops & Posters

#### 5. **A Data-Driven Method for Variation in Animated Smiles (Best Poster)**

Nick Sohre, Stephen J Guy "A Data-Driven Method for Variation in Animated Smiles" (Poster) *Motion in Games 2016*

#### 6. **Generating Sokoban Puzzle Game Levels with Monte Carlo Tree Search**

Kartal, Bilal, Nick Sohre, and Stephen Guy. "Generating sokoban puzzle game levels with monte carlo tree search." *In The IJCAI-16 Workshop on General Game Playing 2016*.

<b>Research Experience</b>	<b>University of Minnesota</b> Minneapolis, MN	Research Assistant August 2016 – Present
	Applied deep learning to local-global path planning and navigation tasks. Used simulation techniques to develop new methods for motion planning under uncertainty. Applied machine learning and data-driven analyses to approach generative tasks including animation and puzzle configurations	
	<b>University of Minnesota</b> Minneapolis, MN	Research Assistant June 2016 – August 2016
	Designed and developed a user study app to collect data on smile effectiveness of patients after facial reconstructive surgery. Performed unsupervised clustering on brain scan data to discover biotypes for high risk and Autism positive toddlers.	
	<b>University of Minnesota</b> Minneapolis, MN	Research Assistant June 2015 – August 2015
	Designed and developed a user study app to collect data on emotional intent of digital facial expressions. Conducted large scale user study and data analysis. Designed and developed a system to explore kernel methods for classification tasks in the microbiome	
<b>Professional Experience</b>	<b>iBusiness Solutions, Inc</b> Edina, MN	Lead Applications Designer August 2011 - August 2014
	Responsible for designing, architecting, and implementing business intelligence applications. Included development of the <i>iBLeague</i> , a web-based business intelligence platform, and a large data warehouse with naïve-bayes classifier for the MN Department of Education	
	<b>Dordt College</b> Sioux Center, IA	Webmaster
	Developed and maintained college-wide external, internal, and departmental websites	
<b>Qualifications</b>	<b>Programming Languages</b> Java, C,C++,C#, PHP, Python, Matlab, R, Web stack (Javascript, HTML, CSS, etc), OpenGL stack (OpenGL/GLSL, SDL,GLEW) <b>Libraries &amp; Tools:</b> TensorFlow, Keras, Unity Game Engine, Visual Studio, IntelliJ, Eclipse <b>Operating Systems:</b> Windows, Linux <b>Databases:</b> MS SQL, MySQL, SSAS	
<b>Awards &amp; Honors</b>	<b>Graduate</b> AIIDE 2016 Best Student Paper, MiG 2016 Runner-up Best Poster	
	<b>Undergraduate</b> DC Presidential Scholarship, Distinguished Scholarship, JJR Leadership Activity Scholarship, Vermeer Computer Science Intern Scholarship, Academic Competitive Grant	

References available upon request.