

# NURCAN GECER ULU

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## RESEARCH INTERESTS

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Computational Design, Design for Manufacturing, Physics Based Modeling, Data-driven Design, Generative Design, Crowdsourcing.

## EDUCATION

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**Carnegie Mellon University** *August 2013 - May 2018*  
PhD in Mechanical Engineering Department (GPA: 4.00/4.00)

**Bilkent University** *September 2010 - August 2012*  
MS in Mechanical Engineering Department (GPA: 3.80/4.00)

**Pennsylvania State University** *Fall 2009*  
Exchange Program in Mechanical Engineering Department (GPA: 4.00/4.00)

**Middle East Technical University** *September 2006 - June 2010*  
BS in Mechanical Engineering Department (GPA: 3.79/4.00)

## WORK EXPERIENCE

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**Palo Alto Research Center** *June 2018 - Present*  
Research Scientist *Palo Alto, CA*

**Carnegie Mellon University** *August 2013 - May 2018*  
Research Assistant *Pittsburgh, PA*

**Siemens Corporate Research** *Summer 2015, Summer 2016*  
Graduate Research Intern *Princeton, NJ*

**Aselsan, Inc** *October 2012 - August 2013*  
R&D Engineer *Ankara, Turkey*

**Bilkent University** *September 2010 - October 2012*  
Research Assistant *Ankara, Turkey*

## SELECTED PUBLICATIONS

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**N.G. Ulu**, S. Korneev, S. Nelaturi, Sliding Basis Optimization for Heterogeneous Material Design, Computer Aided Design/SPM. 2020. (*Best Paper, Second Place*)

E. Ulu, **N.G. Ulu**, W. Hsiao, S. Nelaturi, Manufacturability Oriented Model Correction and Build Direction Optimization for Additive Manufacturing, ASME Journal of Mechanical Design (JMD). 2020.

**N.G. Ulu**, M. Messersmith, K. Goucher-Lambert, J. Cagan and L.B. Kara, Wisdom of Micro-Crowds in Evaluating Solutions to Esoteric Engineering Problems, ASME Journal of Mechanical Design (JMD). 2019.

W. Zhang, J.Z. Yu, F. Zhu, Y. Zhu, **N.G. Ulu**, B. Arisoy, L. B. Kara. High Degree of Freedom Hand Pose Tracking Using Limited Strain Sensing and Optical Training. Journal of Computing and Information Science in Engineering. 2019.

**N.G. Ulu**, Computational Design and Evaluation Methods for Empowering Non-Experts in Digital Fabrication, PhD. Thesis, Carnegie Mellon University, Pittsburgh PA. 2018.

**N.G. Ulu**, S. Coros and L.B. Kara, Designing Coupling Behaviors Using Compliant Shape Optimization, Computer-Aided Design. 2018.

G. Wang, H. Yang, Z. Yan, **N.G. Ulu**, Y. Tao, J. Gu, L.B. Kara, L. Yao, 4DMesh: 4D Printing Morphing Non-Developable Mesh Surfaces. 31th ACM User Interface Software and Technology Symposium (UIST 2018).

W. Zhang, J.Z. Yu, F. Zhu, Y. Zhu, **N.G. Ulu**, B. Arisoy, L. B. Kara, High Degree of Freedom Hand Pose Tracking Using Limited Strain Sensing and Optical Training. ASME International Design Engineering Technical Conferences/CIE. 2018. Quebec City, Canada.

E.B. Arisoy, G. Ren, E. Ulu, **N.G. Ulu** and S. Musuvathy, A Data-driven Approach to Predict Hand Positions For Two-Hand Grasps of Industrial Objects. ASME IDETC, Charlotte, NC, 2016. (*Best Paper*)

**N.G. Ulu**, L.B. Kara, Generative Interface Structure Design for Supporting Existing Objects, Journal of Visual Languages and Computing. 2015.

**N.G. Ulu**, L.B. Kara, Generative Interface Structure Design for Supporting Existing Objects, International Conference on Distributed Multimedia Systems Workshop on Visual Languages and Computing (VLC). September 2015. Vancouver, Canada.

**N.G. Ulu**, Development of a Modular Control Algorithm for High Precision Positioning Systems, MSc. Thesis, Bilkent University, Ankara Turkey. 2012.

**N.G. Ulu**, E. Ulu, and M. Cakmakci, Design and Analysis of A Modular Learning Based Cross-Coupled Control Algorithm for Multi-Axis Precision Positioning Systems, IJCAS, 2016.

E. Ulu, **N.G. Ulu** and M. Cakmakci, Development and Validation of An Adaptive Method To Generate High-Resolution Quadrature Encoder Signals, ASME Journal of Dynamic Systems, Measurement and Control, 2014

**N.G. Ulu**, E. Ulu, and M. Cakmakci, Learning based cross-coupled control for multi-axis high precision positioning systems, ASME Dynamic Systems and Control Conf. (DSCC 2012), Ft. Lauderdale, FL, Oct 2012. (*Best Paper in Session*)

E. Ulu, **N.G. Ulu** and M. Cakmakci, Adaptive correction and look-up table based interpolation of quadrature encoder signals, ASME Dynamic Systems and Control Conf. (DSCC 2012), Ft. Lauderdale, FL, Oct 2012.

## PATENTS

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**N.G. Ulu**, S. Korneev, E. Ulu, S. Nelaturi, Spatial Field Optimization with Reduced Parameters, filed on March 2020.

**N.G. Ulu**, S. Korneev, S. Nelaturi, Design of Microstructures Using Generative Adversarial Networks, filed on May 2019.

E. Ulu, **N.G. Ulu**, W. Hsiao, S. Nelaturi, System and Method for Determining Spatial Distribution of Variable Deposition Size in Additive Manufacturing, filed on Jan 2020.

E. Ulu, **N.G. Ulu**, W. Hsiao, S. Nelaturi, Ensuring Additive Manufacturability of Object Model Using Mezo-skeleton Analysis, filed on Jan 2020.

L. Yao, G. Wang, H. Yang, Z. Yan, **N.G. Ulu**, Y. Tao, J. Gu, L.B. Kara, Inverse Design Tools for Self-Assembling Non-Developable Mesh Surfaces via 3D Printing, filed on April 13, 2018.

J. Aparicio-Ojea, E. Arisoy, L. Dalloro, L.B. Kara, W. Zhang, **N.G. Ulu**, B. Ozdoganlar, K.B. Ozutemiz, J. Yu, F. Zhu, Y. Zhu, Hand Pose Tracking Using Flexible Electronics, 2018P05464WO, 2018.

E. Ulu, E.B. Arisoy, S. Musuvathy, **N.G. Ulu**, System and Method for Build Orientation Based Volume Segmentation, WO2018191034A1, 2018.

S. Musuvathy, G. Allen, L. Mirabella, L. Komzsik, **N.G. Ulu**, System and Method for Modeling of Parts with Lattice Structures, WO2017088134 A1, 2017.

E.B. Arisoy, S. Musuvathy, E. Ulu, **N.G. Ulu**, Methods and System to Predict Hand Positions for Multi-hand Grasps of Industrial Objects, WO2017132134 A1, 2017.

## FELLOWSHIPS AND AWARDS

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The Mary Jane and Milton C. Shaw Fellowship, Carnegie Mellon University 2015

International Scientific Research Incentive Award, TUBITAK 2014

Graduate Fellowship, Scientific and Technical Research Council of Turkey (TUBITAK), 2010 - 2012

Full Scholarship for MS, Bilkent University 2010 - 2012

## TECHNICAL SKILLS

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**Programming**

C++, OpenGL, Qt, MATLAB, Python

**CAD Tools & Rendering**

SolidWorks, NX, Inventor, Rhino, Grasshopper, Blender

**Simulation**

Simulink, SimMechanics, NI LabView