

# Moses C. Nah

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## Education

### Massachusetts Institute of Technology (MIT)

PH.D. IN MECHANICAL ENGINEERING (MIT MECHE)

Cambridge, MA, USA

May.2020 - Present

### Massachusetts Institute of Technology (MIT)

M.S. IN MECHANICAL ENGINEERING (MIT MECHE)

Cambridge, MA, USA

Sep.2018 - May.2020

### Seoul National University

B.S. IN MECHANICAL AEROSPACE AND ENGINEERING

- Summa Cum Laude

Seoul, S.Korea

Mar.2011 - Sep.2018

### Gyeonggibuk Science High School

EARLY GRADUATION WITH HONORS

Gyeonggi-Do, S.Korea

Mar.2009 - Mar.2011

## Publications

### Motor Control Beyond Reach — How Humans Hit a Target with a Whip

ALEKSEI KROTOV, MARTA RUSSO, **MOSES NAH**, NEVILLE HOGAN, DAGMAR STERNAD

- New York Times Article [LINK]

Royal Society Open Science

Journal Publication, 2022

### Manipulating a Whip in 3D via Dynamic Primitives

**MOSES C. NAH**, ALEKSEI KROTOV, MARTA RUSSO, DAGMAR STERNAD AND NEVILLE HOGAN

IROS

Prague, Czech Republic, Sep.2021

### Online Impedance Adaptation Facilitates Manipulating a Whip

XIAOFENG XIONG, **MOSES C. NAH**, ALEKSEI KROTOV AND DAGMAR STERNAD

IROS

Prague, Czech Republic, Sep.2021

### Dynamic Primitives Facilitate Manipulating a Whip

**MOSES C. NAH**, ALEKSEI KROTOV, MARTA RUSSO, DAGMAR STERNAD AND NEVILLE HOGAN

- Best Student Paper Award [LINK]

BIOROB

New York, USA, Nov.2020

### Motion Planning of Autonomous Personal Transporter Using Model Predictive Control for Minimizing Non-Minimum Phase Behavior

DONGIL CHOI, MINSU KIM, HYEONGKEUN KIM, CHOE JONGHUN AND **MOSES C. NAH**

International Conference on Ubiquitous Robots (UR)

Honolulu, U.S.A, Jun.2018

### Design Analysis of Tuskbot: Universal Stair Climbing 4-Wheel Indoor Robot

JONGHUN CHOE, UKJIN KWON, **MOSES C. NAH** AND HYEONGKEUN KIM (EQUAL CONTRIBUTIONS)

- 'Tuskbot with Track Mechanism' for Stairs with Large Nose and Stairs without Riser [LINK]
- 'Tuskbot with Length Adjustment Mechanism' for Stairs with Various Height and Depth [LINK]

IROS

Vancouver, Canada, Sep.2017

### 'Tuskbot': Design of the Mobile Stair Climbing 2 by 2 Wheels Robot Platform with Novel Passive Structure 'Tusk'

JONGHUN CHOE, **MOSES C. NAH**, HYEONGKEUN KIM AND UKJIN KWON (EQUAL CONTRIBUTIONS)

International Conference on Control, Automation and Robotics (ICCAR)

Nagoya, Japan, Apr.2017

### Rocker-Bogie with 'Tusk': Design of the Mobile Robot Platform that can Climb Stairs with Tusk and Rocker-Bogie Mechanism

UKJIN KWON, HYEONGKEUN KIM, **MOSES C. NAH** AND JONGHUN CHOE (EQUAL CONTRIBUTIONS)

Korea Robotics Society Annual Conference (KROC)  
PyeongChang, S.Korea, Feb.2017

## Experience

### NAVER LABS Robotics Team

Gyeonggi-Do, S.Korea

#### UNDERGRADUATE INTERNSHIP PROGRAM

Aug.2016 - Feb.2017

- Advisor: Dr. Sang-ok Seok (Leader of NAVER LABS, MIT MECHE, Meshworm and MIT Cheetah)
- Team Project: "Wheel Based Robot which can Climb Stairs"
- Personal Project: "Li-Ion Battery Pack PCB for Universal Usages of NAVER LABS Robots"
- Developed and Patented a Passive Novel Structure 'Tusk'
- Developed and Published Four Successful Stair Climbing Robots

### SNU Biorobotics Lab

Seoul, S.Korea

#### UNDERGRADUATE THESIS

Mar.2017 - Present

- Advisor: Prof. Kyu-Jin Cho (Professor of Seoul National University)
- Stabilized the Underactuation Mechanism of "SNU Exo-Glove Poly"
- Developed Circuitry for Material Stiffness Identification

## Honors & Awards

2020	<b>Best Student Paper Award</b> , 2020 BIOROB	New York, NY, USA
2020	<b>First Place Presenter, \$500 Award</b> , 2020 MIT MERE	Cambridge, MA, USA
2018	<b>₩1,500,000 Start-Up Investment</b> , SNU Start-Up Camp	Seoul, S.Korea
2017	<b>Excellence Award with ₩1,500,000</b> , SNU Smart Social Contribution Contest	Seoul, S.Korea
2017	<b>Excellent Paper Award with ₩500,000 Prize</b> , SNU CTL 26th Best Report Contest	Seoul, S.Korea
2017	<b>Young Talent Support Scholarship</b> , NAVER LABS	Seoul, S.Korea
2017	<b>Gwanak Special Intention Scholarship</b> , Hanil Corporation	Seoul, S.Korea
2013	<b>Grand Prize Award</b> , Design, Manufacturing Process and Laboratory Contest	Seoul, S.Korea
2011	<b>First Runner-Up Prize Award</b> , Creative Engineering and Design Contest	Seoul, S.Korea
2009	<b>International Physics Olympiad Candidate</b> , Winter and Summer School Completion	Seoul, S.Korea
2009	<b>Gold Medal Prize</b> , 12 <sup>th</sup> Korea Physics Olympiad High School Session	Seoul, S.Korea
2009	<b>First Place</b> , Task Assignment Test before High-School Admission	Seoul, S.Korea
2008	<b>Silver Medal Prize</b> , 11 <sup>th</sup> Korea Physics Olympiad Middle School Session	Seoul, S.Korea

## Presentations and Invited Talks

### Conference Presentations

- 2021 **ICRA (Virtual)**
- 2020 **Neural Control of Movement** Blitz Talk
- 2020 **BIOROB** Best Student Paper Award, [LINK]
- 2020 **Neuromatch Conference 3.0** [LINK]

### Poster Presentations

- 2022 **NERC (Northeast Robotics Colloquium) Lowell**
- 2022 **MIT De Florez Competition**
- 2022 **MIT MERE**
- 2021 **DO-Sim at RSS (Robotics: Science and Systems)**
- 2021 **Neural Control of Movement**
- 2020 **MIT MERE** First Place Presenter, \$500 Award
- 2020 **IROS Workshop** Impedance Learning, [LINK 1] [LINK 2]
- 2019 **MIT MERE**
- 2019 **MIT Embodied Intelligence Research Mixer**

### Invited Talks

- 2017 **TEDx SNU Salon** Presenter for TED Session: People who make Something

## Patents

- 2017 **KR10-2017-0037517**, Assistive Device for Stair Climbing Robot Seoul, S.Korea

## Teaching Experience

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### Teaching Assistant (MIT)

Cambridge, MA, USA

#### TEACHING ASSISTANTSHIP APPOINTMENT

- 2022 Fall — 2.032 Dynamics (current)
- 2021 Fall — 2.151 Advanced System Dynamics & Control Overall, Rating: 6.8/7.0

### Group and Personal Tutor

Seoul, S.Korea

#### COURSES FROM SNU LIBERAL EDUCATION

- Tutor of Science and Technology Writing Class - 2017 Autumn, 2018 Spring Semester
- Tutor of Basic Physics Class Students - 2012 Autumn, 2013 Spring Semester
- Tutor of Basic Calculus Class Students - 2012 Spring, 2012 Autumn, 2013 Spring, 2018 Spring Semester

### Group Tutor

Seoul, S.Korea

#### SNU SOCIAL RESPONSIBILITY (SNUSR)

- Group Tutor of Arduino Class

## Extracurricular Activity

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### Voluntary TA for Quals - Dynamics

Cambridge, MA, USA

#### MIT MECHE

2021 - Present

### Seongnam City Bundang Borough Office

Gyeonggi-Do, S.Korea

#### SOCIAL SERVICE AGENT

Jun.2014 - Jun.2016

- Bureaucratic Book Binder

### SNU in Washington D.C

Washington D.C, U.S.A.

#### MEMBER

Oct.2013 - Jan.2014

- 'SNU in Series' Global Visiting Program
- Seoul National University Special Talent Training Program

### SNU NGO Dream Consultant

Chungju, S.Korea

#### MEMBER

Aug.2013 - Sep.2013

- Mentor of Chungju High School

## Media

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### MIT News

[LINK]

Nov.2020

### Yonhap News

[LINK]

Oct.2017

### Hankyung Economics

[LINK]

Jun.2017

## Skills

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#### PROGRAMMING LANGUAGES

- C/C++, Python, R, Bash, LaTeX, HTML, XML, RMarkdown

#### VERSION CONTROL

- GIT

#### OTHERS

- Matlab, MuJoCo, ROS, Docker, LabVIEW

#### CADs

- KiCAD, Solidworks

#### LANGUAGE

- English, Korean