

# Donggeun Cha, Ph.D.

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## Summary

### Business Areas

- Robot S/W and Robot SI, AI Automation Robot System, AI Agricultural Manual-Task Automation Robot

### Research Areas

- Robotics, Mobile robots, Autonomous Navitation, Automation Robots, AGVs
- Physical-AI based Manual-Task Automation AI Robot System
- Person-Following of Mobile Robots, People Tracking, People Detection, Multi-target Tracking
- Path Planning, Localization, Motion Control, Machine Learning, Deep Learning, Algorithms

### Dissertation

- Title: LiDAR Sensor-based Robust Detection and Tracking for Person-Following of Autonomous Navigation Robots in Crowded Environment
- Advisor: Woojin Chung

## Education

### Korea University

PH.D. IN MECHANICAL ENGINEERING

- Advisor: Woojin Chung

Seoul, SOUTH KOREA

Aug. 2022

### Korea University

B.E. IN ELECTRICAL ENGINEERING

Seoul, SOUTH KOREA

Feb. 2012

## Experience

### 대표이사

#### Cha Robotics Inc.

INDUSTRIAL ROBOT MANUFACTURING, PHYSICAL-AI BASED MANUAL-TASK AUTOMATION  
ROBOT SYSTEM

Daegu, SOUTH KOREA

March 2023 - Current

- Responsibilities: Business Management and R&D
- Headquarters: (41260) 3rd Floor #308, 465 Dongdaegu-ro, Dong-gu, Daegu (Sinchon-dong, Daegu Scale-up Hub)
- Corporate Research Institute and Factory: (14303) #1501, 6, Beoman-ro 996beon-gil, Gwangmyeong-si, Gyeonggi-do (Haan-dong, Gwangmyeong Tiamo IT Tower)
- Homepage: <https://www.charobotics.com>

### Research Professor

#### College of Engineering, Korea University

NEXT-GENERATION MACHINE DESIGN TECHNOLOGY RESEARCH CENTER

Seoul, SOUTH KOREA

Sep. 2022 - Feb. 2023

- Intelligent Systems & Robotics Laboratory, Dept. of Mechanical Engineering

### Research Assistant

#### Department of Mechanical Engineering, Korea University

INTELLIGENT SYSTEMS & ROBOTICS LABORATORY

Seoul, SOUTH KOREA

Mar. 2012 - Aug. 2022

- Advisor: Woojin Chung

### Teaching Assistant

## Publication

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### Journal Articles

**[J0] LiDAR Sensor-based Robust Detection and Tracking for Person-Following of Autonomous Navigation Robots in Crowded Environment**

**Donggeun Cha** and Woojin Chung

*Note: in preparation.*

**[J2] Trajectory Planner CDT-RRT\* for Car-Like Mobile Robots toward Narrow and Cluttered Environments**

Hyunki Kwon, **Donggeun Cha**, Jihoon Seong, Jinwon Lee and Woojin Chung

*Sensors*, vol. 21, no. 14, p. 4828, 2021.

**[J1] Human-Leg Detection in 3D Feature Space for a Person-Following Mobile Robot Using 2D LiDARs**

**Donggeun Cha** and Woojin Chung

*International Journal of Precision Engineering and Manufacturing (IJPEM)*, vol. 21, pp. 1299–1307, 2020.

### International Conferences

**[C5] Segment Extraction for Detecting Human Legs in Two-Dimensional Range Data**

**Donggeun Cha** and Woojin Chung

*16th International Conference on Ubiquitous Robots (UR)*, 2019, Poster.

**[C4] An Ultrasonic Beacon-Based Localization Scheme Considering Motion Uncertainty of Mobile Robots**

Jiwoong Kim, Jiyong Jin, Hyunki Kwon, Hyunsuk Lee, Jihoon Seong, **Donggeun Cha**, Kooktae Lee, Chang-bae Moon and Woojin Chung

*The 5th International Conference on Engineering and Applied Sciences (ICEAS)*, 2015.

**[C3] Drivable Road Region Detection and Autonomous Navigation of a Surveillance Robot**

Hyunsuk Lee, Woosik Lee, Jiwoong Kim, Jiyong Jin, Hyunki Kwon, **Donggeun Cha**, Youjin Shin, Changbae Moon and Woojin Chung

*The 5th International Conference on Engineering and Applied Sciences (ICEAS)*, 2015.

**[C2] Tracking Human Legs for an Indoor Mobile Robot with a Single Laser Range Finder**

**Donggeun Cha**, Hyojoo Cho, Jiyong Jin, Hyunki Kwon, Jiwoong Kim, Hyunsuk Lee, Jihoon Seong, Chang-bae Moon, Hyeon Kim, Yoonchang Sung and Woojin Chung

*The 5th International Conference on Engineering and Applied Sciences (ICEAS)*, 2015.

**[C1] 3D Obstacle Detection of Indoor Mobile Robots by Floor Detection and Rejection**

**Donggeun Cha** and Woojin Chung

*Smart IT Applications Workshop*, 2013.

### Thesis

**[T1] LiDAR Sensor-based Robust Detection and Tracking for Person-Following of Autonomous Navigation Robots in Crowded Environment**

**Donggeun Cha**

*Ph.D. Dissertation, Korea University*, 2022.

### Domestic Conferences

**[D7] 이동로봇의 사람추적을 위한 파티클 기반 확률론적 필터의 데이터 결합 기법의 구현**

차동근, 정우진

정보 및 제어 학술대회 CICS'19, 2019.

- [D6] 레이저거리센서를 장착한 자율주행자동차를 위한 주변 차량과 보행자에 대한 강인한 인식기술  
형승호, 차동근, 정우진  
제32회 제어로봇시스템학회 학술대회, 2017.
- [D5] 3 차원 깊이센서를 이용한 주행장애물 검지기법에의 단일평면추출의 적용  
차동근, 정우진  
제10회 한국로봇종합학술대회, 2015.
- [D4] 3차원 깊이 센서를 이용한 장애물 감지를 위한 바닥 특성 분석  
차동근, 정우진  
제29회 제어로봇시스템학회 학술대회, 2014.
- [D3] 키넥트를 이용한 실내 이동로봇의 3차원 장애물 감지기법의 실험적 성능 분석  
차동근, 정우진  
대한기계학회 2013년도 학술대회, 2013.
- [D2] 이동로봇의 충돌 회피를 위한 3차원적 장애물 인식  
차동근, 정우진  
제8회 한국로봇종합학술대회, 2013.
- [D1] 키넥트를 이용한 이륜차동로봇의 사람 추종  
차동근, 정우진  
제7회 한국로봇종합학술대회, 2012.

## Honors & Awards

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### Domestic

2010 **Award of Excellence**, The 1st Creative Challenger Program

Seoul, SOUTH KOREA