

Dukchan Yoon

Ph.D.

Postdoctoral Researcher

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Education

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| B.S. | Feb. 2014 | Hanyang University, ERICA, Ansan, Korea |
| | | - Electronic Systems Engineering |
| | | - For the work titled “Wearable and Motorized Crutch Control System” |
| M.S. | Aug. 2016 | Hanyang University, Ansan, Korea |
| | | - Electronic Systems Engineering and Robotics |
| | | - Advisor: Prof. Youngjin Choi |
| | | - Thesis: Anthropomorphic Underactuated Finger Mechanism towards Prosthesis |
| Ph.D. | Aug. 2020 | Hanyang University, Ansan, Korea |
| | | - Electrical and Electronic Engineering |
| | | - Advisor: Prof. Youngjin Choi |
| | | - Thesis: Modeling and Kinematic Analysis of Human Finger, Wrist, and Forearm Mechanisms using Parallel Linkages |

Awards

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| Sep. 2013 | Bronze Award |
| | Capstone Design Contest of Hanyang University |
| Jun. 2014 | Outstanding Poster Paper Award |
| | The 9 th Korea Robotics Society Annual Conference (KROC) |
| Jan. 2016 | Outstanding Poster Paper Award |
| | The 11 th Korea Robotics Society Annual Conference (KROC) |
| Feb. 2017 | Best Journal Paper Award |
| | Korea Robotics Society (KROS) |
| Aug. 2020 | Outstanding Journal Paper Award |
| | Korea Robotics Society (KROS) |

Publications

International Journal Papers

1. **Dukchan Yoon** and Youngjin Choi, “Underactuated Finger Mechanism using Contractible Slider-Cranks and Stackable Four-Bar Linkages,” *IEEE/ASME Transactions on Mechatronics*, vol. 22, No. 5, pp. 2046–2057, Oct. 2017. [SCI]
2. **Dukchan Yoon**, Long Kang, Sajjad Manzoor, and Youngjin Choi, “The Modified DLR Wrist: Design and Analysis of 2-DOF Rotational Mechanism using Spatial Anti-

parallelogram Linkages,” *Transactions of ASME, Journal of Mechanical Design*, vol. 143, No. 5, pp. 053303.1–12, May, 2021. [SCI-E]

3. **Dukchan Yoon** and Youngjin Choi, “Analysis of Fingertip Force Vector for Pinch-Lifting Gripper with Robust Adaptation to Environments”, *IEEE Transactions on Robotics*, vol. 37, No. 4, Aug, 2021. [SCI]

International Conference

1. Long Kang, Jong-Tae Seo, **Dukchan Yoon**, Sang-Hwa Kim, Il Hong Suh, and Byung-Ju Yi, “Design of a 3-DOF Linkage-Driven Underactuated Finger for Multiple Grasping,” *The IEEE RAS/EMBS International Conference on Intelligent Robots and Systems (IROS)*, pp. 5608–5613, Nov. 2019.
2. **Dukchan Yoon**, Geon Lee, Sungon Lee, and Youngjin Choi, “Underactuated Finger Mechanism for Natural Motion and Self-adaptive Grasping towards Bionic Partial Hand,” *The IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRoB)*, pp. 548–553, Jun. 2016.
3. Minsang Seo, **Dukchan Yoon**, Junghoon Kim, and Youngjin Choi, “EMG-based Prosthetic Hand Control System Inspired by Missing-Hand Movement,” *The International Conference on Ubiquitous Robots and Ambient Intelligence (URAI)*, pp. 290–291, Oct. 2015.

Domestic Journal Papers

1. **윤덕찬**, 이건, 최영진, “인간의 전완 회전을 위한 원위 요척골 관절의 기구학적 모델링,” *로봇학회논문지*, vol 14, No. 4, pp. 251-257, Dec., 2019.
2. 이건, **윤덕찬**, 최영진, “인대 구조에 기인한 유연 경첩 관절,” *로봇학회논문지*, vol 14, No. 4, pp. 237-244, Dec. 2019.
3. **윤덕찬**, 이건, 최영진, “신체 힘에 의해 동작되는 부분 의수를 위한 부족구동 손가락 메커니즘,” *로봇학회 논문지*, vol. 11, No. 4, pp. 193-204, Dec. 2016.
4. **윤덕찬**, 장기호, 최영진, “착용형 전동목발 제어시스템,” *로봇학회 논문지*, vol. 9, No. 3, pp. 183-189, Sep. 2014.

Domestic Conference

1. **윤덕찬**, 최영진, “의수를 위한 생체모사 팔 메커니즘,” 제 13 회 한국로봇종합학술대회, pp. 366-367, 2018.
2. 서민상, **윤덕찬**, 최영진, “물체 파지를 위한 부족구동 적층형 4 절 링크 손가락 메커니즘,” 제 11 회 한국로봇종합학술대회, pp. 52-53, 2016.
3. **윤덕찬**, 이건, 최영진, “부분 의수를 위한 적응형 손가락 메커니즘 설계,” 제 11 회 한국로봇종합학술대회, pp. 48-49, 2016.
4. **윤덕찬**, 장기호, 최영진, “근전도 신호를 이용한 능동형 전동 목발 시스템,” 제 9 회 한국로봇종합학술대회, pp. 213-215, 2014.

Invited Talk

1. **Dukchan Yoon**, “Underactuated Linkage Mechanisms for Prosthetic Finger and Hand,” *Asian Prosthetic and Orthotic Scientific Meeting (APOSIM)*, Nov., 2016.

Patents

Registered

1. Adaptive Robotic Finger Prosthesis for Grasping Arbitrary Object Shape (Patent No.
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10709584, US)

2. 로봇구동기구 및 로봇구동방법 (Patent No. 10-1851860, KR)
3. 물체의 형상 적응이 가능한 로봇 의지 (Patent No. 10-0145283, KR)
4. 회전수단을 구비한 목발 (Patent No. 10-1391879, KR)
5. 손가락 의지 (Patent No. 10-2170364, KR)

Pending

1. 로봇 그리퍼 (Application No. 2020-0019494, KR)
2. 로봇 메커니즘 (Application Patent No. 2019-0064057, KR)

Technology Transfers

1. 물체 형상 적응형 로봇 손가락 의지, (주)지티지엘, 2016 년 (30,000 천원)
2. 환경적 제약에 적응하는 그리퍼, (주)진영코퍼레이션, 2020 년 (30,000 천원)

Research Interests

- Robotics in industrial and bionic applications including gripper, prosthesis, and rehabilitation device.
 - Kinematic analysis, geometry, and synthesis of parallel manipulators based on screw theory.
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