CHAO-YU **CHEN**

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About myself:
Strong problem solving engineer with cross disciplinary knowledge and background; entrepreneurial mindset and innovation driven characteristics in additive manufacturing, robotics and healthcare. Well equipped with mechatronics, mechanics, and biology skillsets for prototyping and product development. Continuous seeking novelty and breakthroughs of design workflows and automation in various fields.

EXPERIENCE

2018/03 – 2019/01
RESEARCH ASSISTANT, NATIONAL TAIWAN UNIVERSITY
@Orthopaedic Engineering and Movement Analysis Lab (OEMAL)
- Develop a standardize workflow of muscle fatigue detection in clinical trials via EMG signal processing
- Gait analysis with the aid of VICON system

2019/08 – 2020/01
TEACHING ASSISTANT, NATIONAL UNIVERSITY OF SINGAPORE
@ Fundemental of Biomechanics BN2204 (NUS)
- Taught the standard of operation in gait analysis with VICON system and force plate
- Guided undergraduate and graduate students through calibration, post-processing and analysis of the biomarker data.

2019/01 – 2019/12
PRODUCT LEAD, UPPERMED PTE. LTD.
@ PD care (Portable Peritoneal Dialysis Peristaltic Pump)
- Advised on overall design and CAD modelling technique
- Conceptualize and validate the design with team and end users

2019/12 – NOW
RESEARCH ENGINEER, NATIONAL UNIVERSITY OF SINGAPORE
@ Evolution and Innovation Lab (EI Lab)
- Develop and Design of expendable multifaceted soft gripper for Hyper-Personalization Line (HPL) with A*STAR ARTC
- 3D printing soft robotics and compliant bioinspired mechanism for design validation

2021/06 – NOW
CO-FOUNDER, ROPLUS PTE. LTD.
- Design customized and standardized End-of-arm-tools(EOATs) for F&B and FMCG customers (e.g. UnisoGrip™)
- Coordinate business and R&D development to meet market validation result

EDUCATION

2014/08 – 2018/06

BACHELOR OF ENGINEERING, NATIONAL TAIWAN UNIVERSITY

Major in **Mechanical Engineering**. I have been involved in research projects ranged from autonomous vehicles, image recognition, electrospinning stent designs, EMG signal processing to gait analysis.

2019/01 – 2022/04

MASTER OF ENGINEERING (BY RESEARCH), NATIONAL UNIVERSITY OF SINGAPORE

Major in **Biomedical Engineering**. Stemming from my mechanical background, my research focus ranges from 3D printed soft robots to topology optimization of bioinspired soft actuators. Inventor of a reconfigurable gripping device (PCT patented), inspired by cuttlefish. Authors of 3D printed soft extension actuator (Robosoft 2021) and Soft Gripper with mechanical sensing via snap-through structure (R-AL 2022).

RESEARCH

2014/07 – 2014/09

GEL ELECTROPHORESIS, NATIONAL TAIWAN UNIVERSITY

@ Optoelectronics & Medical Physics and Biomedical Engineering Lab

- Summer research intern to help in the experiment of DNA separation of control and treatment group cancer cells

2014/09 – 2015/01

INTELLIGENT AUTONOMOUS VEHICLE, NATIONAL TAIWAN UNIVERSITY

@ Formosun Advanced Power Research Lab

- Aid in Electric Power Steering system from CAD modelling to implement OpenCV for autonomous lane detection and steering.

2017/03 – 2018/01

ELECTROSPINNING STENT, NATIONAL TAIWAN UNIVERSITY

@ Advanced Medical Device Lab

- Design and force analysis of electrospinning stent for drug delivery
- Stent crimping device design and prototyping

2020/09 – 2021/04

3D PRINTED SOFT EXTENSION ACTUATOR, NATIONAL UNIVERSITY OF SINGAPORE

@ Evolution and Innovation Lab (EI Lab)

- 3D printing soft extension module for wearable device and bin picking end effectors.

2021/03 – 2022/03

SOFT RECONFIGURABLE GRIPPING, NATIONAL UNIVERSITY OF SINGAPORE

@ Evolution and Innovation Lab (EI Lab)

- Design and conceptualize expandable mechanism of the gripper base with features of variable gripping pose, width and modalities.

SKILLS

- 3D modelling (Autodesk Fusion 360)
- Coding (Matlab/Python/C++)
- Mechatronics prototyping (Arduino/Raspberry)
- Additive manufacturing (3D printing/silicone molding)
- Work management (Linux/Docker)
- Language (Mandarin/Taiwanese/English/Japanese)
- Gait Analysis
- Pattern Recognition and signal processing

PUBLICATION

- Self-Wearing Soft Robotic Glove (Oral presentation)
  - Biomedical Engineering Society 13th Society Meeting (BES13SM)
- Shape Shifting Actuator (Oral presentation)
  - International Conference on Biomedical Engineering (ICBME 2019)
- 3D printed Soft Extension Actuator (Oral presentation)
  - IEEE 4th International Conference on Soft Robotics (Robosoft 2021)
- GSG: A Granary-Shaped Soft Gripper with Mechanical Sensing via Snap-through Structure
  - IEEE Robotics and Automation Letters (Volume: 7, Issue: 4, October 2022)
- A Gripping device (Auto-reconfigurable multifaceted gripper)
  - PCT patent no. WO2022/098300 A1
- Soft Printable Robots with Flexible Metal Endoskeleton
  - IEEE Transactions on Robotics (Accepted)