



RoMetric: Intelligent Hand Function ROM Assessment system

Complete hand functionality is essential for daily productivity and quality of life, yet around **10%** of the global **population faces risk** of hand dysfunction from diseases or injury. RoMetric is a **patented** system to **automatically** evaluate **hand joint** range of motion (**ROM**), a **critical** hand function **indicator**, using **advanced computer vision**. It introduces a standardised 7-pose protocol to capture maximum ROM across all hand joints, then reconstructs them in **3D**, mimicking **clinical goniometry**. This initiative measures angles precisely and enables **high-accuracy** automated assessments to support continuous, frequent, and objective **longitudinal tracking of rehabilitation progress**, enabling truly personalised strategies.

Project Team
Dr Fu Hong
Prof Chan Che Hin Chetwyn
Miss Hou Beibei
Dr Xu Yanwen
Prof Wang Jun
Miss Wang Ying
Mr Li Xiao
Miss Qiu Minyu
Mr He Ziyu
Miss Wang Yanyue
Miss Han Lin



FEATURES AND ADVANTAGES

Reduces assessment time by 87% by **digitalisation** and **automation** of visualised guidance, objective data collection and analysis **01**

High reliability and accuracy: excellent **inter-rater reliability** for flexion (**ICC = 0.75-0.91**). Test-retest mean error **<5°** for most joints, eliminating subjective deviation **02**

AI-powered algorithm to ease clinician's **tedious workload** by quick setup and regular measurement **03**

Objective, rapid measurements to **support longitudinal rehab tracking** **04**

Simulates clinical goniometry, enabling **repeatable** measurement under global protocol **05**

Lowers costs by 70% while enriching medical resources via complete **IoMT** **06**

FUTURE DEVELOPMENTS

- **Expand and upgrade** RoMetric via **clinical trials** and iterative feedback by hospital users
- Develop **personalised rehab algorithms** on the current platform to enable a closed loop: **Assess-Train-Reassess-Adapt (ATRA)**
- **Launch** a **light hardware + SaaS clinic version** and **home rehab version** to meet multiple needs, accomplishing immediate and remote patient follow-ups