Reviewing the literature on gesture recognition

Identify the algorithms, applications, gestures, sensors, and tools used for gesture recognition.

Identifying the challenges of radar-based gesture recognition

Investigate applications, algorithms, gestures, and radar sensors.

Contribution(s)

📖 SLR on radar-based gesture recognition

Chapter(s) **2** *RQ(s)* **2** **3**

Identifying the challenges of building highly usable gesture-based application

Investigate the applications and challenges of gestural interaction and look into the state of LMC-based gesture recognition.

Contribution(s)

📖 TLR on gestural interaction

📖 SLR on LMC-based gesture interaction

Chapter(s) **2**

RQ(s) **1** **5**

Processing radar data for gesture recognition

Design and implement a pre-processing pipeline for improving radar-based gesture recognition.

Contribution(s)

⚒ Radar data pre-processing pipeline

Chapter(s) **6** *RQ(s)* **3** **4**

Facilitating the development of gesture-based applications

Design, implement, and evaluate a framework for testing and building gesture-based interaction.

Contribution(s)

⚒ QuantumLeap framework

Chapter(s) **3** **4** *RQ(s)* **4** **5**

Designing highly usable gesture-based applications

Propose a user-centered development method for gesture-based applications.

Contribution(s)

▤ User-centered development method

Chapter(s) **5** *RQ(s)* **5**

Investigating the feasibility of radar-based gesture recognition

Evaluate the performance of our pipeline on gestures collected in various contexts from a large set of users.

Contributions

🗄🧪 Sensors comparison

🗄🧪 20 gestures

🗄🧪 Gestures through materials

Chapter(s) **7**

RQ(s) **2** **3** **4**

Applying our tools and methods to real use-case applications

Design, develop, and evaluate a gesture-based application for manipulating multimedia content.

Contributions

📷 Large User Interface

Chapter(s) **5**

RQ(s) **5**

Drawing lessons from experience

Summarize our findings and discuss future avenues of research.

Contributions

| 📷 Applications | 🧪 Experiments | ▤ Methods |
| 🗄 Datasets | 📖 Literature reviews | ⚒ Tools |

Software requirements

| ① Compatibility | ③ Portability |
| ② Maintainability | ④ Usability |