



Augmented Reality: Telehealth Demonstration Application

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Introduction

- The Microsoft HoloLens device allows for rendering of interactable virtual components into real world space.
- It gives the user the hands-free computing capabilities.
- Our team was tasked with creating an application to demonstrate the capabilities of the HoloLens device
- The envisioned field for the application is Telehealth care

Motivation

- Establish Mixed Reality Development at UNH for future student developers
- Exhibit HoloLens device capabilities through demonstration application for the Telehealth practice center
- The handsfree nature of using augmented reality makes healthcare an ideal use case
- Document a stable development environment to fit changing Windows configuration needs

Application Details

- Requirements provided by members of the Telehealth Practice Center
- Care Plan for use at home:
 - Exercises
 - Medications
 - Daily tasks
- The caregiver would load the care plan for the patient to take home
- Patient types:
 - Cardiac
 - Mild cognitive impairment

Application Design

User Interface

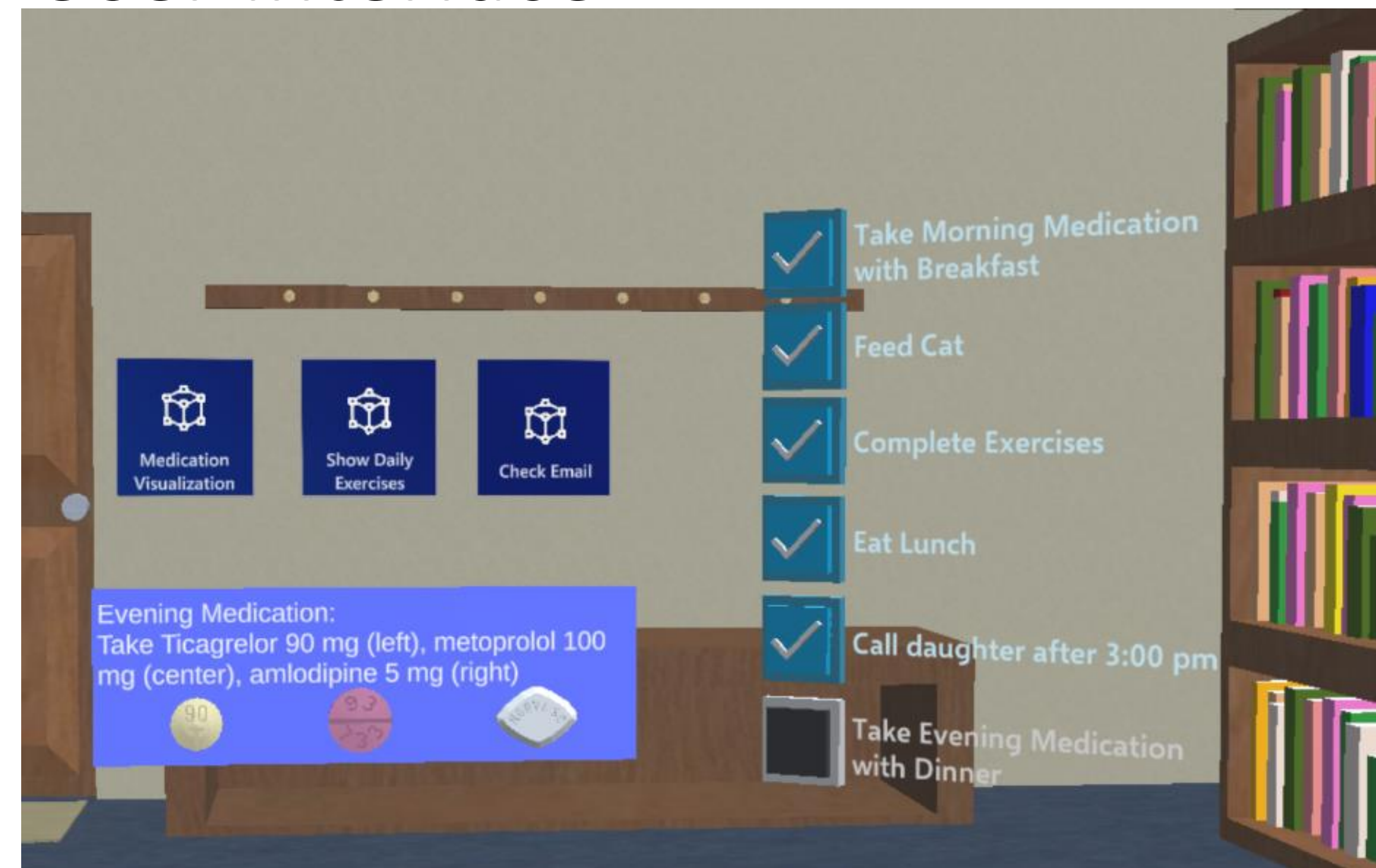
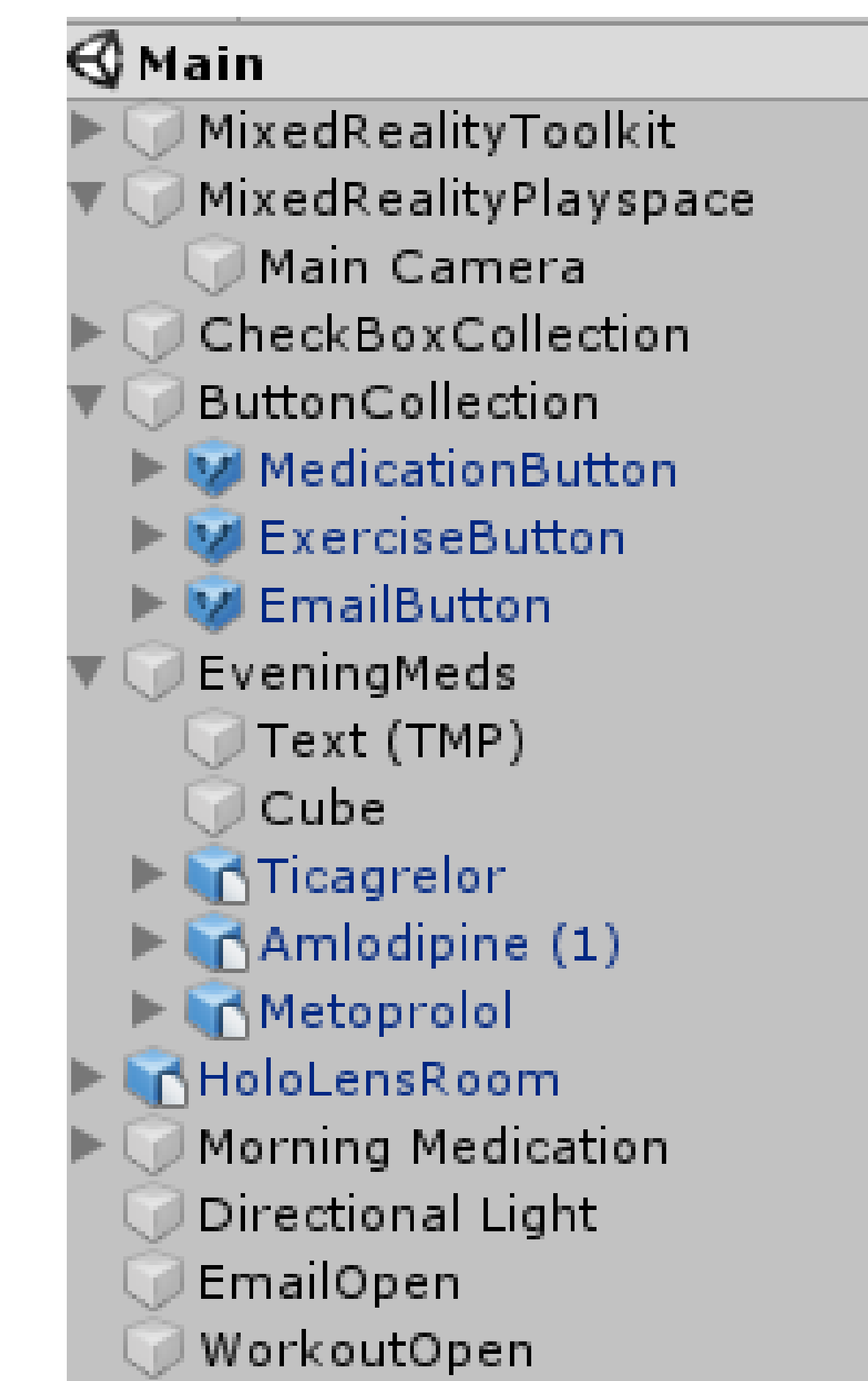


Image shows application running on HoloLens emulator

- Application contains a checklist for the patient's daily activities and buttons to help complete their care plan
- The evening medication is shown after pressing the medication visualization with the initial condition that morning medication is checked on the checklist
- 3-D Models of the medication were created to match color, shape, etc. of the actual medication the patient will take

Unity UI Components



Conclusion

- Understood the use cases where this hardware could benefit the age of telehealth treatment for caregivers in healthcare.
- Built a demonstration application with the Microsoft HoloLens following the documentation for device and development.
- The documentation and demonstration is a starting point for future augmented reality developers at UNH

Future Works

- Develop more complex applications with the Microsoft HoloLens that connect with outside resources
- Build a general HoloLens development library using the Mixed Reality Tool Kit.
- Documentation and implementation of an ideal augmented reality user interface (UI).
- Implement more telehealth related applications by collaborating with UNH Telehealth Practice Center

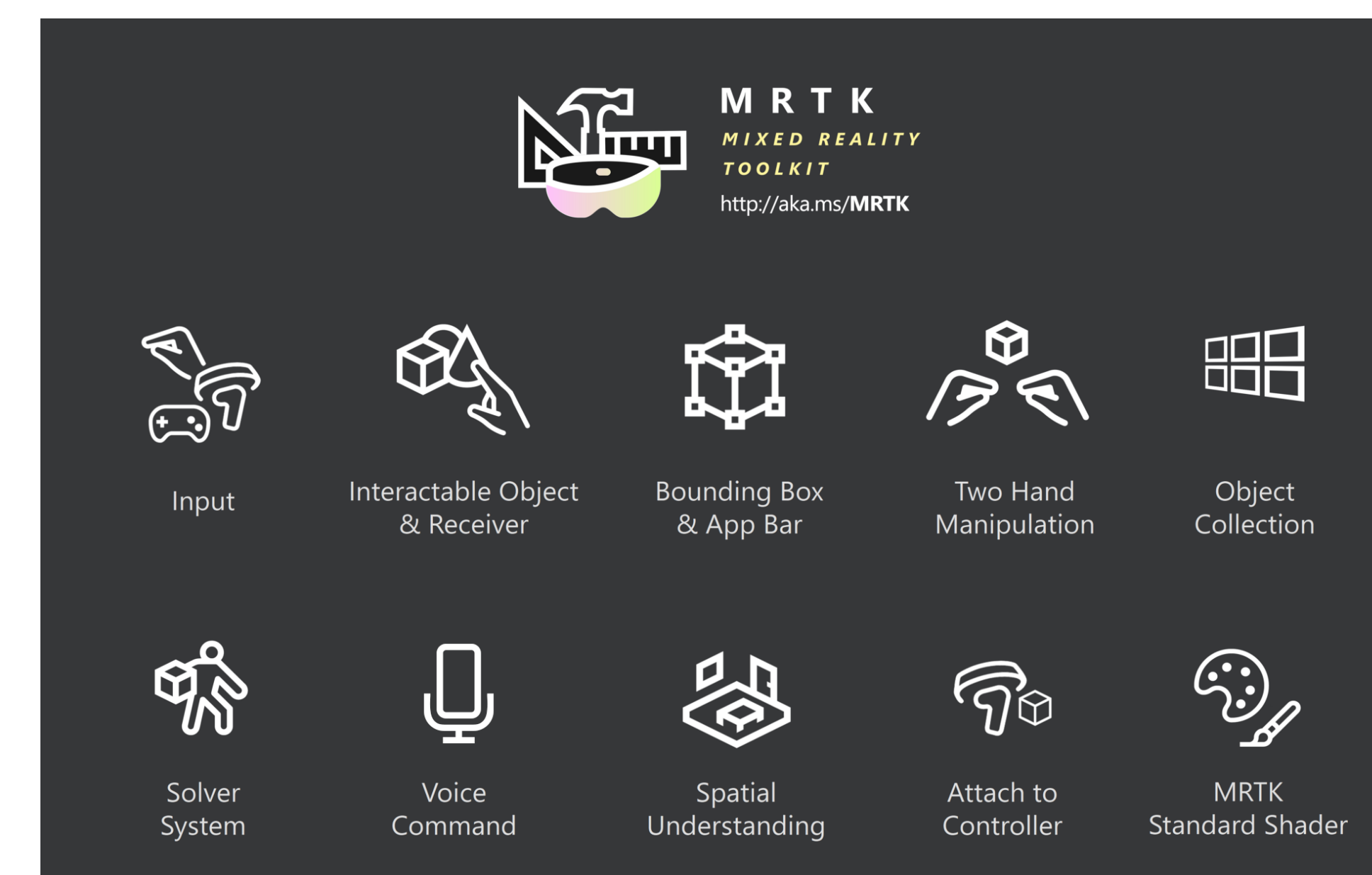
Technology

Hardware



Microsoft HoloLens Gen1 Device

Software



Acknowledgements

- Our Sponsor, Scott Valcourt
- The UNH Computer Science department and Professor Plumlee
- Members of the Telehealth Practice Center at UNH, Gene Harkless and Marguerite Corvini

References

- UNH Telehealth Practice Center
- <https://chhs.unh.edu/telehealth-practice-center>
- Application Code
- https://gitlab.cs.unh.edu/ntb1008/hololens_demoapp
- Development Environment Setup
- <https://unh.box.com/s/jfdgz0jtpcdv8ezq6jmv0baae7lohv24>