# MTRN4110 Group 6 Meeting Minutes

*BELOW TABLE IS A TEMPLATE FOR MEETING MINUTES*

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| **Date** | 2021/08/20, 4:00 | | |
| **Attendees** | Dan, James, Taimoor | | |
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| **Agenda** | | **Discussion** | |
| Ladybug white background size | | * Decided to use a cylinder ladybug without an aruco marker | |
| Discuss Contribution of Team Members | | * Established that Dan did most of the work for Integration * Taimoor and Dan weren’t as experienced with rigorous cpp practices and weren’t able to run the webots world file because of MacOS issues | |
| Decided new strategy for recording video | | * James listed detailed steps/sections in presentation. Might have to rerecord some section if he wants to shuffle parts around | |
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| **Actionables** | | | **Assignee** |
| * Finish presentation notes for Extra Features | | | Taimoor |
| * Use ladybug\_small with no aruco and in a cylinder | | | Taimoor |
| * Continue Video editing | | | Dan |

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| **Date** | 2021/08/14, 1500 | | |
| **Attendees** | James, Taimoor, Dan | | |
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| **Agenda** | | **Discussion** | |
| Phase C Integration Cython | | * Require testing on MacOS, Windows, Linux. Will use VMs to test. * Make sure not to use global variables in python script | |
| Teleoperation Feature Progress | | * Established that when the controller is executed, the user will be presented with 2 options. One for normal execution and one for the “special features” mode. | |
| Video Script | | * Presentation notes need to be filled in for the VO for Video | |
| Extra Features | | * Implement a cat and mouse game * Mouse will be the robot that is being manually controlled * Cat will be autonomous robot that chases mouse * A camera will be used in the webots world file to help the cat keep track of where the mouse is | |
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| **Actionables** | | | **Assignee** |
| * Fill in the presentation notes for the recording | | | Everyone |
| * Complete teleoperation, map generation using manual control, and wall following | | | Taimoor |
| * Do research for using the camera module in webots | | | James |
| * Refactor the phase C code from programs/\*.ipynb to scripts/CVPuckYou.pyx to abide with the cython requirements for input and returns. | | | James |
| * Continue integration of Phase A and B. | | | Dan |
| * Write control loop | | | Dan |

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| **Date** | 2021/08/12, 1600 | | |
| **Attendees** | James, Taimoor, Dan | | |
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| **Agenda** | | **Discussion** | |
| Phase C Integration | | * Catching up on progress so far.   + Embedding python using Python.h. Something wrong with path.   + Cython. Compilation bug.   + Bash script. Runs two processes, lack of control over robot behaviour. Very ugly. Not portable. Recommended by MTRN4110.   + Consider pyinstaller and have executables of Phase C for every platform. Have OS-dependent C++ to run executables.   + Last resort is using the bash script. * Decided to halt this to catch up on integration and extra features. | |
| Extra Features | | * Start on teleoperation. * Taimoor has previous experience with webots keyboard. | |
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| **Actionables** | | | **Assignee** |
| * Develop MotionTeleoperation | | | Taimoor |
| * Comparison video script | | | James |
| * Architectural Integration | | | Dan |

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| **Date** | 2021/08/09, 2100 | | |
| **Attendees** | James, Taimoor, Dan | | |
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| **Agenda** | | **Discussion** | |
| Discuss architecture | | * Showed RSA and Interfaces & Implementations diagram * Splitting up Phase B   + Mapper class   + PathPlanner class * Splitting up Phase C   + Perspective transform is minimum effort for all parts   + Function/script for getting walls in text file   + Function/script for getting epuck location   + Function/script for getting ladybug/destination | |
| Extra Features | | * Cat and mouse | |
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| **Actionables** | | | **Assignee** |
| * Carry on with integrations | | | Everyone |
| * Write boilerplate interfaces | | | Dan |
| * Adjust timelines | | | Taimoor |
| * Explore Canva templates | | | James |

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| **Date** | 2021/08/05, 2030 | | |
| **Attendees** | James, Taimoor, Dan | | |
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| **Agenda** | | **Discussion** | |
| Team name? | | * TogetherBots * Wall-E * Puck You | |
| Review Gantt chart | | * Can make Gantt chart nicer for video * Can look at it at progress check | |
| Walkthrough template for comparison study | | * Completed Phase B and Phase C comparison. * Suggestion for integrating the best of each other’s code | |
| Code integration process | | * Phase A is the hardest to integrate * Phase B is just a program that doesn’t have to be dependent on A   Steps to integrate solutions:   1. Pick best solution 2. Cherry-pick things we want from the other solutions and merge   Steps to integrate phases:   1. Integrate solutions for phase A 2. Integration phase B and C into A   Phase B integration - James will use his code (because it’s correct) and incorporate elements of Dan’s style into it. | |
| Brainstorming features | | * Replacing e-puck.   + Will be a headache to adjust code. * Exploration module in Phase A. * Bang-bang trajectory.   + Should be okay. * Obstacle avoidance   + If there’s an obstacle (not a wall), turn around and find another route.   + Update mall if there is a wall.   + Can start a new maze run. * Remote control   + Easy   + Switch between teleop and autonomous while driving * Building a map using onboard sensors   + Doable   + Have to implement remote control first * Record video of robot navigating maze * Track the motion of robot using CV * Implement localisation, SLAM   + No * Re-centring using robot sensors * Using radial turns instead of on-the-spot turning   Features to implement – priority queue   1. Remote-control 2. Obstacle avoidance 3. Bang-bang trajectory. | |
| Allocate more tasks | | Task owners make sure these sections get done (not actually soley do these sections)   * 3.4 Video – James * 3.2 Integration – Taimoor * 3.1 Compare – James * 3.3 Features – Dan | |
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| **Actionables** | | | **Assignee** |
| * Phase A Comparison | | | Dan |
| * Integrate solutions for phases that people compared | | | Everyone |
| * Change name of GitLab org | | | Dan |
| * Go to progress check at 1245 | | | Everyone |

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| **Datetime** | 2021/08/03, 1430 | | |
| **Attendees** | James, Dan, Taimoor | | |
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| **Agenda** | | **Discussion** | |
| Chatting | |  | |
| What is Phase D about? | | * Open-ended implementation of features of our own choice. * 6 min video presentation. | |
| Walk through each other’s implementations | | There is a marking criteria for this:    Phase A   * James   + Global variables   + Not calibrated for 30-40 moves   + MotorController class   + DistanceProcessor class   + Write2CSV class   + 95   + Long main function * Taimoor   + Calibrated for 400 moves   + No functions??? * Dan   + 96   + Calibrated for 20-30 moves   + TaskControl class   + MotionController class   + DrivePlan class * Everyone implemented dead-reckoning. Get best dead-reckoning code   Phase B   * James   + Floodfill   + 100 * Taimoor   + 70-something – Lost marks in motion sequence * Dan   + BFS + DFS   + Faster than Floodfill   + 98.4 – Lost mark cause extra F in motion sequence   Phase C   * James   + Got biggest contour for markers   + Got centroid of contours for robot   + SURF detector for ladybug * Taimoor   + Template matching to detect ladybug * Dan   + Used erode and dilate for everything   + Used red and blue walls to order points   + Real ladybug = both ladybugs – fake ladybug   Each person will have a phase where they will compare 3 assignments.  Criteria for comparing solutions   * Test coverage * Robustness * Code clarity * Extensibility * Time complexity * Modularity | |
| Version control for collaborative coding | | * GitLab because it can view .ipynb * Mermaid in Markdown for Gantt charts | |
| Issue tracking | | * No need for it * Using actionables in minutes | |
| Timeline | | * Thursday night for solution comparison * Thursday night for brainstorming features * Monday night for solution integration * Next week, recording of few sections | |
| Team Name | | * Rusty Potatoes * TogetherBots | |
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| **Actionables** | | | **Assignee** |
| Make a template for phase comparison & share with everyone | | | Dan |
| Phase A comparison | | | Dan |
| Phase B comparison | | | James |
| Phase C comparison | | | Taimoor |
| Make Gantt chart | | | Taimoor |
| Make GitLab organisation & get everyone’s repo links | | | James |