

Team



Minutes



for



Team 7



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| Meeting Date:  Put date here | Start Time: Record time meeting started End Time:  Record meeting end time  Summary of Meeting |
| 1. Attendance | Record members present (if absent, include reasons and whether teammates were notified in advance). |
| 2. Purpose of  Meeting |  |
| 3. Discuss work completed since last meeting. | Team members report on what has been accomplished. Record notes of those reports here. |
| 4. Summarize work completed during meeting | Summarize discussion and work accomplished. |
| 5. Review action items to be completed after meeting | Who will do what by when? |

Delete the instructions in black italics and replace them with your team’s information. Add new information after each meeting and save the document with the current date after the document name. This will create one long document that includes the minutes of all team meetings. You will have the old versions saved under document names with the previous dates in case they are needed.

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| Team Members’ Names |
| Jonah Bertolino |
| Hunter Burnham |
| Joseph Kirby |
| Caden Nubel |
| Joel Shorey |

# Meeting Agenda Template

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| 6. Schedule next meeting | Note time, place, and purpose. |
| 7. Recording secretary | Note who took the meeting minutes and the date that meeting minutes were circulated by e-mail. |

# Meeting 1

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| Meeting Date:  2/12/2024 | Start Time: 2:00 pm End Time: 3:00 pm Summary of Meeting |
| 1. Attendance | All members attended |
| 2. Purpose of  Meeting | Start of project meeting |
| 3. Discuss work completed since last meeting. | Jonah Bertolino: Start of project, no previous work |
| Hunter Burnham: Start of project, no previous work |
| Joseph Kirby: Start of project, no previous work |
| Caden Nubel: Start of project, no previous work |
| Joel Shorey: Start of project, no previous work |
| 4. Summarize work completed during meeting | Discussed Objectives for the next week, assigned tasks to each group member, and discussed logistics on how to work with each other over the course of the project. Started discussing how to go about completing each task. |
| 5. Review action items to be completed after meeting | Jonah Bertolino: Determining Quadrant of Aruco Marker |
| Hunter Burnham: Implement LCD Threading, Communication with Arduino |
| Joseph Kriby: Establish GitHub on Pi, Assist Hunter and Jonah |
| Caden Nubel: Create and implement PI controller |
| Joel Shorey: Create and implement PI controller |
| 6. Schedule next meeting | Monday 2/19/2024 at 12:00 pm |

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| 7. Recording secretary | Hunter Burnham |

# Meeting 2

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| Meeting Date:  Put date here | Start Time: 1:30 pm End Time: 2:30 pm Summary of  Meeting |
| 1. Attendance | All members attended |
| 2. Purpose of  Meeting | Talking about documentation and wrapping up mini project. |
| 3. Discuss work completed since last meeting. | Jonah Bertolino: Interfaced threading code and aruco quadrant detection code/developed code |
| Hunter Burnham: Established the threading and I2C communication between pi and Arduino |
| Joseph Kirby: Established Github on Pi, worked on aruco detection and handling of markers |
| Caden Nubel: Made the PI controller code |
| Joel Shorey: Matlab simulation for PI controller, helped interface computer vision with controls |
| 4. Summarize work completed | Discussed all of our tasks that we completed since last week, talked about next steps for completing documentation and |
| during meeting | cleaning up code, preparing for end of week assignments |
| 5. Review action items to be completed after meeting | Jonah Bertolino: Complete documentation, update Github |
| Hunter Burnham: Complete documentation, update Github |
| Joseph Kirby: Complete documentation, update Github |
| Caden Nubel: Complete documentation, update Github |
| Joel Shorey: Complete documentation, update Github |
| 6. Schedule next meeting | Monday Feb 26, 2:00pm |

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| 7. Recording secretary | Joseph Kirby |

# Meeting 3

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| Meeting Date:  2/28/2024 | Start Time: 2:00 pm End Time: 4:00 pm Summary of  Meeting |
| 1. Attendance | Jonah Bertolino, Joseph Kirby, Hunter Burnham, Caden Nubel,  Joel Shorey |
| 2. Purpose of  Meeting | Pi group discussed how to find angle from camera to Aruco marker. Arduino group is figuring out how to get the robot to drive in a straight line. |
| 3. Discuss work completed since last meeting. | Jonah Bertolino: Figured out how calibrate the camera. |
| Hunter Burnham: Put some headers in Mini Project code. Worked on finding angle from camera to Aruco marker using camera calibration |
| Joseph Kirby: Worked on finding angle from camera to Aruco marker using camera calibration |
| Caden Nubel: Worked on the code to get the robot to drive straight and thought abstractly about how to decompose the problems. |
| Joel Shorey: Finished up all the Mini project documentation code. Started working on Demo 1 with Caden. |
| 4. Summarize work completed during meeting | Pi group discussed what we were going to work on moving forward, such as finding the distance from the center of the screen to the Aruco marker. Arduino group |
| 5. Review action items to be completed after meeting | Jonah Bertolino: Find distance from camera to Aruco marker |
| Hunter Burnham: Find distance from center of screen to the  Aruco marker on the screen |
| Joseph Kirby: Find distance from center of screen to the Aruco marker on the screen |
| Caden Nubel: To have the robot drive in a straight line. |
| Joel Shorey: To have the robot drive in a circle |
| 6. Schedule next meeting | Next Monday at 2:00 pm |
| 7. Recording secretary | Jonah Bertolino |

# Meeting 4

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| --- | --- |
| Meeting Date:  3/8/2024 | Start Time: 1:40 pm End Time: 3:00 pm Summary of  Meeting Completed Demo 1 |
| 1. Attendance | Jonah Bertolino, Joseph Kirby, Hunter Burnham, Caden Nubel,  Joel Shorey |
| 2. Purpose of  Meeting | Pi group discusses how they have a backup plan for finding the angle using math. Today they need to figure out how to find the angle using calibration. |
| 3. Discuss work completed since last meeting. | Jonah Bertolino: Found the horizontal FOV while working with Joseph of the camera so we could correctly find the angle with  0.3 degrees using math. |
| Hunter Burnham: Found the angle using calibration using a camera matrix |
| Joseph Kirby: Found the horizontal FOV while working working with Jonah using math. Also assisted Hunter with coding the calibration. |
| Caden Nubel: Rewrote the entire code to implement a forward velocity and rotational velocity vector. Also tuned controllers. |
| Joel Shorey: Debugged the controllers. Worked on debugging the first implementation strategy. Put together turning and moving forward code. |
| 4. Summarize work completed during meeting | We finished up the project and just need to complete a video presentation. |
| 5. Review action items to be completed after meeting | Jonah Bertolino: Create a video presentation of camera finding angle |
| Hunter Burnham: Create a video presentation of camera finding angle |
|  | Joseph Kirby: Create a video presentation of camera finding angle |
| Caden Nubel: Finish tuning and figure out how to drive straight and rotate properly then create a video presentation. |
| Team member: Finish tuning and figure out how to drive straight and rotate properly then create a video presentation. |
| 6. Schedule next meeting | Monday at 2:00 pm |
| 7. Recording secretary | Jonah Bertolino |

# Meeting 5

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| Meeting Date:  3/15/2024 | Start Time: 1:40 pm End Time: 3:00 pm Summary of  Meeting Started Demo 2 |
| 1. Attendance | Jonah Bertolino, Joseph Kirby, Hunter Burnham, Caden Nubel,  Joel Shorey |
| 2. Purpose of  Meeting | Discuss the beginning of Demo 2 |
| 3. Discuss work completed since last meeting. | Jonah Bertolino: Completed documentation for Demo 1. Also demoed Demo 1. |
| Hunter Burnham: Completed documentation for Demo 1. Also demoed Demo 1. |
| Joel Shorey: Completed documentation for Demo 1. Also demoed Demo 1. |
| Joseph Kirby: Completed documentation for Demo 1. Also demoed Demo 1. |
| Caden Nubel: Completed documentation for Demo 1. Also demoed Demo 1. |
| 4. Summarize work completed during meeting | Started on Demo 2. Agreed that the robot should turn in 30 degree angles looking for the Aruco marker. Once the marker was detected, we would send the angle from the Pi to the Arduino. The robot would then move forward or go around the marker accordingly. |
| 5. Review action items to be completed after meeting | Jonah Bertolino: Work on sending information from the Pi to the Arduino. |
| Hunter Burnham: Work on sending information from the Pi to the Arduino. |
|  | Joel Shorey: Make the robot drive in a circle. Also debug random errors involved with the robot. |
| Joseph Kirby: Work on sending information from the Pi to the Arduino. |
| Caden Nubel: Make the robot drive in a circle. Also debug random errors involved with the robot. |
| 6. Schedule next meeting | 3/22/2024 at 1:40 pm |
| 7. Recording secretary | Jonah Bertolino |

# Meeting 6

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| Meeting Date:  3/22/2024 | Start Time: 1:40 pm End Time: 3:00 pm Summary of  Meeting Continued to work on Demo 2 |
| 1. Attendance | Jonah Bertolino, Joseph Kirby, Hunter Burnham, Caden Nubel,  Joel Shorey |
| 2. Purpose of  Meeting | Discuss how the work has been going on in Demo 2 |
| 3. Discuss work completed since last meeting. | Jonah Bertolino: Reviewed the requirements for Demo 2 and made sure we were on track to complete before the deadline. |
| Hunter Burnham: Reviewed the code we had written so far and started to determine how to send bytes over I2C. |
| Joel Shorey: Made the robot drive in a circle. Also resolved some errors with the robot movement. |
| Joseph Kirby: Reviewed the requirements for Demo 2 and made sure we were on track to complete before the deadline. |
| Caden Nubel: Made the robot drive in a circle. Also resolved some errors with the robot movement. |
| 4. Summarize work completed during meeting | Discussed sending floats over I2C. Pi worked on sending a Boolean on whether the marker is detected or not, then send the angle, then send a number to tell the robot to stop. Arduino worked on receiving this info and turning accordingly. |
| 5. Review action items to be completed after meeting | Jonah Bertolino: Figure out how to send floats over I2C. Also figure out the camera exposure. |
| Hunter Burnham: Figure out how to send floats over I2C. Also figure out the camera exposure. |
|  | Joel Shorey: Write code to receive a float from the Pi. Also write code to go through the motions involved in Demo 2. |
| Joseph Kirby: Figure out how to send floats over I2C. Also figure out the camera exposure. |
| Caden Nubel: Write code to receive a float from the Pi. Also write code to go through the motions involved in Demo 2. |
| 6. Schedule next meeting | 3/29/2024 at 1:40 pm |
| 7. Recording secretary | Jonah Bertolino |

# Meeting 7

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| Meeting Date:  3/29/2024 | Start Time: 1:40 pm End Time: 3:00 pm Summary of  Meeting Worked on wrapping up Demo 2 |
| 1. Attendance | Jonah Bertolino, Joseph Kirby, Hunter Burnham, Caden Nubel,  Joel Shorey |
| 2. Purpose of  Meeting | Wrap up Demo 2 |
| 3. Discuss work completed since last meeting. | Jonah Bertolino: Found an issue with the camera and worked with Joseph to fix it. |
| Hunter Burnham: Worked on the code. Still working on sending floats over I2C. |
| Joel Shorey: Figured out how to receive floats over I2C. Also wrote code to go through the motions involved in Demo 2. |
| Joseph Kirby: Found an issue with the camera and worked with Joseph to fix it. |
| Caden Nubel: Figured out how to receive floats over I2C. Also wrote code to go through the motions involved in Demo 2. |
| 4. Summarize work completed during meeting | Jonah and Joseph resolved issues related to the camera by figuring out the camera we were using had high exposure and eventually replacing it with a better camera. Hunter continued to debug his code. Caden and Joel worked with Hunter to integrate the two subsystems. |
| 5. Review action items to be completed after meeting | Jonah Bertolino: Finish the code and start documentation. |
| Hunter Burnham: Finish the code and start documentation. |
|  | Joel Shorey: Debug random errors that sometimes occur with the robot. |
| Joseph Kirby: Finish the code and start documentation. |
| Caden Nubel: Debug random errors that sometimes occur with the robot. |
| 6. Schedule next meeting | 4/8/2024 at 1:40 pm |
| 7. Recording secretary | Jonah Bertolino |

# Meeting 8

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| Meeting Date:  4/8/2024 | Start Time: 1:40 pm End Time: 3:00 pm Summary of  Meeting Completed Demo 2 and started Demo 2 Documentation |
| 1. Attendance | Jonah Bertolino, Joseph Kirby, Hunter Burnham, Caden Nubel,  Joel Shorey |
| 2. Purpose of  Meeting | To discuss Demo 2 results and finish up documentation, including writing headers for all our code, completed team agenda and team minutes. |
| 3. Discuss work completed since last meeting. | Jonah Bertolino: Finished and demoed Demo 2. |
| Hunter Burnham: Finished and demoed Demo 2. |
| Joel Shorey: Finished and demoed Demo 2.. |
| Joseph Kirby: Finished and demoed Demo 2. |
| Caden Nubel: Finished and demoed Demo 2. |
| 4. Summarize work completed during meeting | Jonah completed team minutes while Joseph completed team agenda. Hunter, Joel, and Caden worked on documenting their code and making sure headers were written and formatted correctly. |
| 5. Review action items to be completed after meeting | Jonah Bertolino: Look at and review Final Demo requirements. |
| Hunter Burnham: Look at and review Final Demo requirements. |
|  | Joel Shorey: Look at and review Final Demo requirements. |
| Joseph Kirby: Look at and review Final Demo requirements. |
| Caden Nubel: Look at and review Final Demo requirements. |
| 6. Schedule next meeting | 4/15/2024 at 1:40 pm |
| 7. Recording secretary | Jonah Bertolino |

# Meeting 9

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| Meeting Date:  4/15/2024 | Start Time: 1:40 pm End Time: 3:00 pm Summary of  Meeting Worked on debugging Final Demo code |
| 1. Attendance | Jonah Bertolino, Joseph Kirby, Hunter Burnham, Caden Nubel,  Joel Shorey |
| 2. Purpose of  Meeting | To debug the Final Demo code using experiments and print statements. |
| 3. Discuss work completed since last meeting. | Jonah Bertolino: Debugged Pi code. |
| Hunter Burnham: Debugged Pi code. Uploaded latest version of code to GitHub. |
| Joel Shorey: Debugged Arduino code. Uploaded latest version of code to GitHub. |
| Joseph Kirby: Debugged Pi code. |
| Caden Nubel: Debugged Arduino code. |
| 4. Summarize work completed during meeting | Worked through a couple problems but couldn’t get the robot to work completely. |
| 5. Review action items to be completed after meeting | Jonah Bertolino: Work on Final Demo Presentation and Team Minutes for Final Demo. |
| Hunter Burnham: Continue debugging and think about how to fix the code. |
|  | Joel Shorey: Continue debugging and think about how to fix the code. |
| Joseph Kirby: Work on Final Demo Presentation and Team Agenda for Final Demo. |
| Caden Nubel: Work on Final Demo Presentation and Team Agenda for Final Demo. |
| 6. Schedule next meeting | 4/22/2024 at 1:40 pm |
| 7. Recording secretary | Jonah Bertolino |

# Meeting 10

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| Meeting Date:  4/22/2024 | Start Time: 1:40 pm End Time: 3:00 pm Summary of  Meeting Worked on debugging Final Demo code |
| 1. Attendance | Jonah Bertolino, Joseph Kirby, Hunter Burnham, Caden Nubel,  Joel Shorey |
| 2. Purpose of  Meeting | Complete Final Demo |
| 3. Discuss work completed since last meeting. | Jonah Bertolino: Worked on Final Demo Presentation and Team Minutes. |
| Hunter Burnham: Debugged code. |
| Joel Shorey: Debugged code. |
| Joseph Kirby: Worked on Final Demo Presentation and Team Agenda. |
| Caden Nubel: Worked on Final Demo Presentation and Team Agenda. |
| 4. Summarize work completed during meeting | Final Demo Presentation, Team Minutes, and Team Agenda were all completed. Final Demo was also completed. |
| 5. Review action items to be completed after meeting | Jonah Bertolino: Film and edit the Final Demo Video. Demo the final product. |
| Hunter Burnham: Film the Final Demo Video. Demo the final product. |
|  | Joel Shorey: Film the Final Demo Video. Demo the final product. |
| Joseph Kirby: Film the Final Demo Video. Demo the final product. |
| Caden Nubel: Film the Final Demo Video. Demo the final product. |
| 6. Schedule next meeting | 4/22/2024 at 1:40 pm |
| 7. Recording secretary | Jonah Bertolino |