

Miracles of Engineering



Our Team

MOE 365 FTC is a FIRST Tech Challenge (FTC) team. We design, build, and program robots to play games released every year by FIRST (FIRST stands for the Inspiration and Recognition of Science and Technology). Our full team name is **MOE – the Miracle Workerz**. MOE stands for **Miracles of Engineering**.

Our Notebook

Our Engineering Notebook will contain **documented thoughts, decisions, lessons learned**, and the actions we took in order to make what our robot is now. It features **design matrices, whiteboard pictures, and many other visual aids**. We follow a specified **Design Process** as a guideline for all of our decisions. Our Engineering Notebook also includes how we **positively** affected the **FIRST and STEM Community** through various outreach events.



Noteable Pages

Our design process B1-7

- Iterative and intuitive
- Used for decision-making
- Integrated into notebook entries

Season Strategy C2, C5-C7

- Created quick priority list
- Built Early-season programming chassis to meet priorities

Latching C22-28, C91-93

- Fabricated early season
- Larger margin of error with passive opening
- Strong and reliable

Minerals C211-213, C231-235, C254

- Laser-cut acrylic custom harvester
- Stays parallel to ground & conforms to minerals
- Linear chain slide cascades in both directions
- Lightweight, carbon fiber arm
- Mechanical Limit of 2 minerals

MOEPS E10-15, E17-E30

- MOEPS stands for MOE Positioning System
- A dynamic and intelligent path-finding system and self-correction
- Calculates a path that avoids obstacles regardless of location on field.
- Uses Jump Point Search for fast pathing

Neural Networks E37-43

- Tested & created our own custom neural network for sampling
- Before the official release of TFLite for SDK
- Major learning experience

Sampling C178-179, E119-121

- Unique algorithm that works independent of lighting and variations in position
- Captures Vuforia frames for custom analysis

Business Plan F1-13

- Presents our team goals
- Shows our various impacts throughout the community
- States our sustainability plan for passing down team knowledge
- Contains information regarding finances.



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