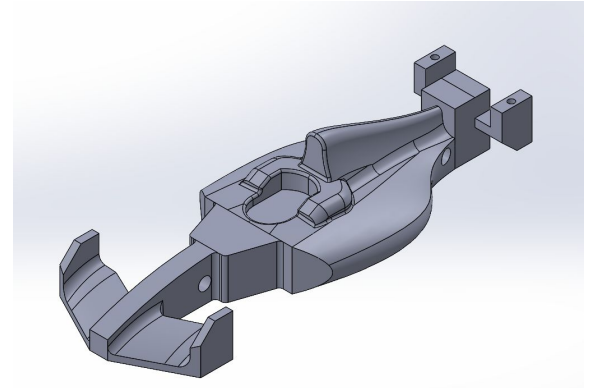
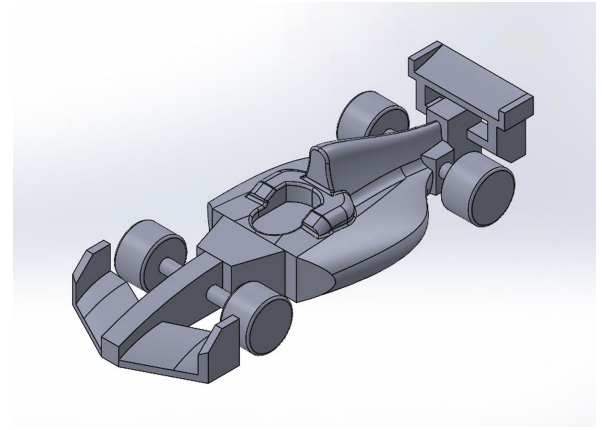


Candy Presentation

Adam Laycock, Theo Kang

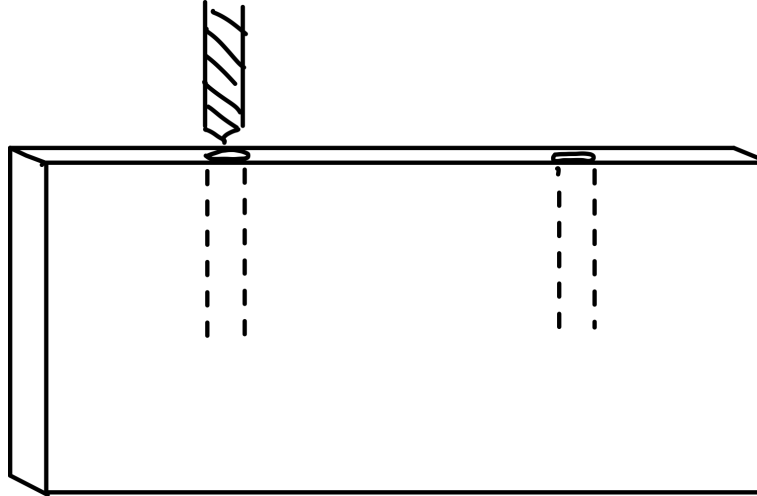
Design Process

- Scaled original design by 0.8 to fit aluminum stock size → Bounding box size decreased from 7.7 x 2.8 x 1.75 to 6.3 x 2.5 x 1.5
- Removed wheels, axles and rear wing (to be 3D printed)
- 3 Holdings: Side Holes, Under Profile, Top Profile
- Designed 3D printed pieces to achieve complex geometry



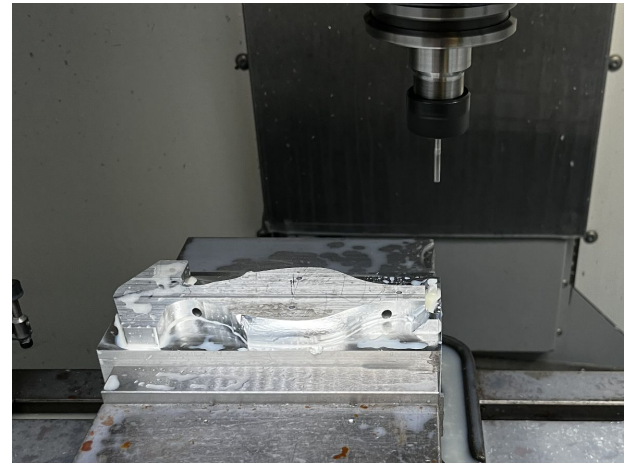
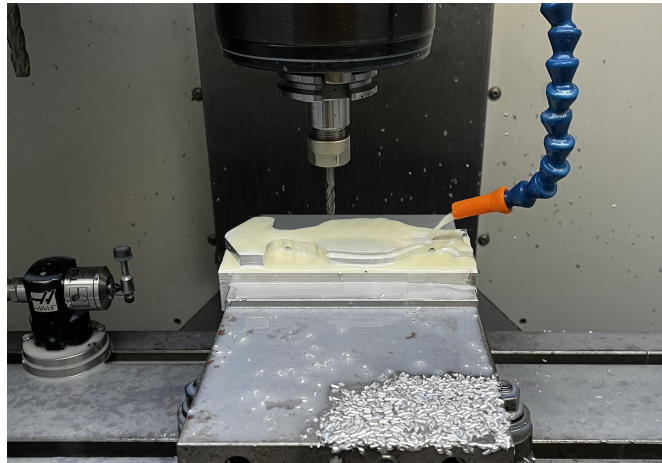
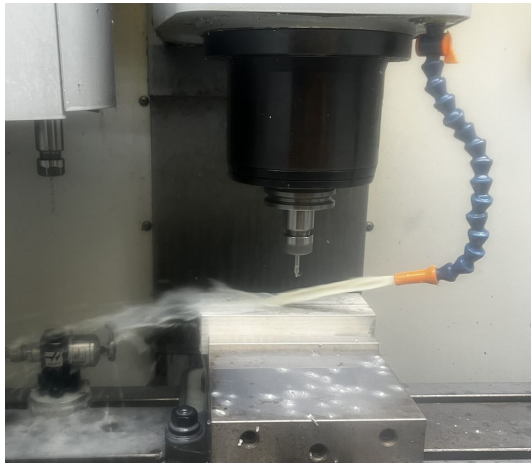
Manufacturing Process (Side Holes)

- End mill to face off side
- Oriented with front face upwards in a vice with parallels
- Zeroed at top left edge
- Center drill followed by #7 drill (0.201") to a depth of ~ -1.5in



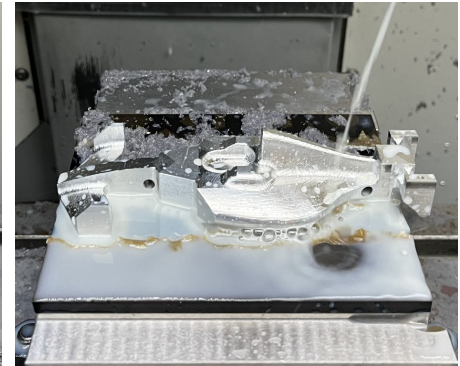
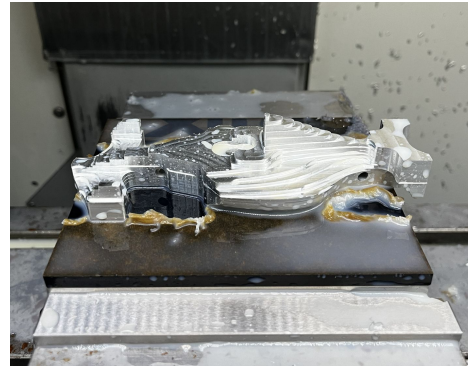
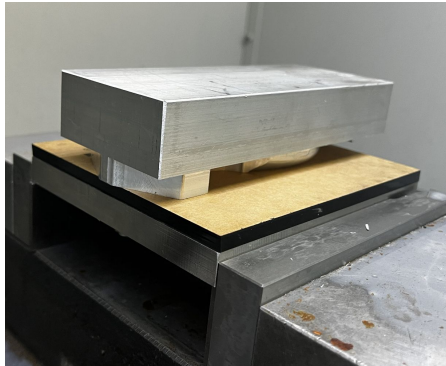
Manufacturing Process (Under Profile)

- Oriented with top face upwards in a vice with parallels
- Fixture holes: Center drill followed by #36 drill for tapping 6-32 screw
- 3D Dynamic OptiRough using 0.5" and 0.25" flat end mill
- Surface finishing (Equal Scallop) using 0.25" ball end mill
- Equal Scallop with 0.125" ball end mill on rear wing knob (Adam only)

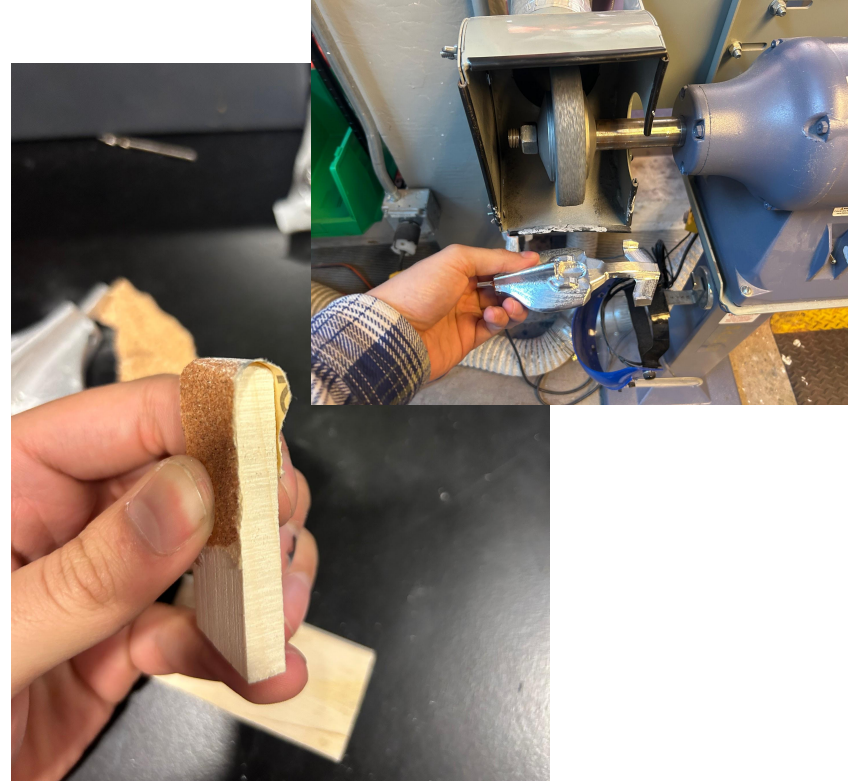


Manufacturing Process (Top Profile)

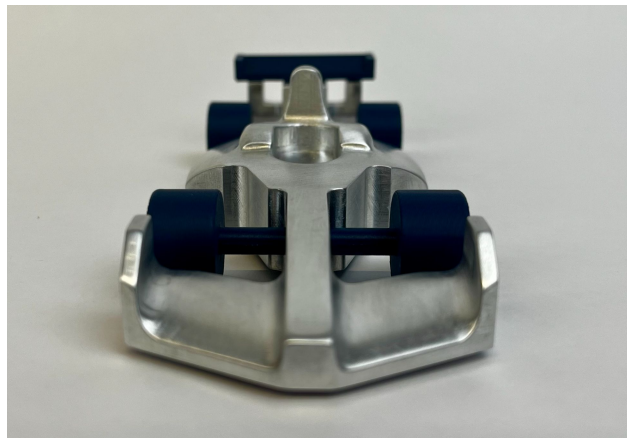
- Screwed under profile onto acrylic and fixture block
- 3D Dynamic OptiRough using 0.5" and 0.25" square end mill
- Surface finishing (Equal Scallop) using 0.25" ball end mill
- Pockets (using bounding box) and #36 drill for rear wing
- Leftover (using bounding box around headrest) using 0.125" ball end mill



Post-Processing and Assembly



Final Result (Theo)



Final Result (Adam)



Challenges

- Manufacturing feasibility: Figuring how to integrate the rear wing - transitioning away from initial idea of splitting car into two components
- Initial manufacturing plans required more flips
- Initial CAM times were too long (prior to receiving stock)
- Reviewing tool operation settings of Mastercam to avoid collisions

Learnings

- Creating new planes on Mastercam for the different flip operations to integrate all operations in a single file
- Using new Mastercam operations (3D OptiRough, Equal scallops, etc) beyond previous operations like Contour, Drill, Pocket, etc
- Trade off between time and finishing quality for the different sized ball end mills