

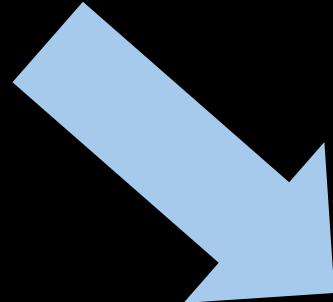
CAD Portfolio

Matthew J. Nielsen

mniel17@byu.edu | R1



*Current model



AKAI MPK mini Next Generation

Final Project | 35 hours

All parts/assemblies modeled in
Onshape

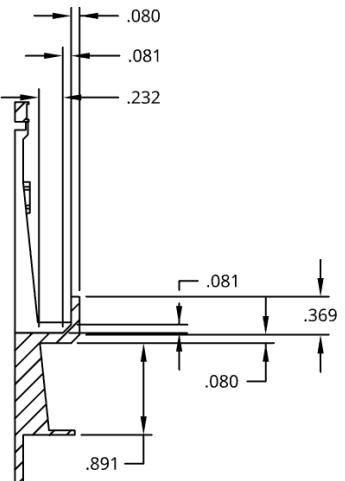
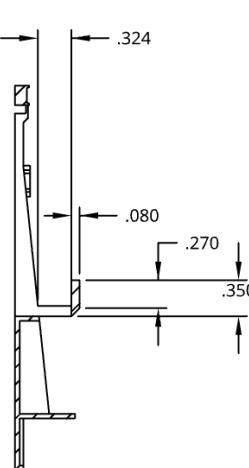
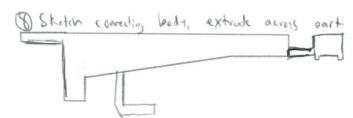
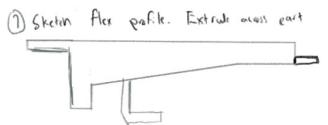
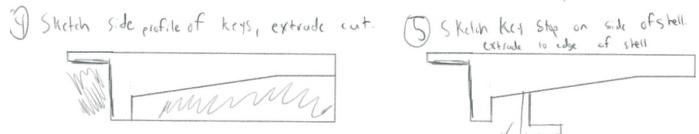


"Use your design and CAD skills to create an original next-generation version of an existing product"

Matthew J. Nielsen

AKAI MPK mini Next Generation

- All parts sketched beforehand
- CAD strategies created for each part to make more robust models in shorter amount of time
- Engineering drawings created for several parts and final assembly



Shell tool used to hollow out part



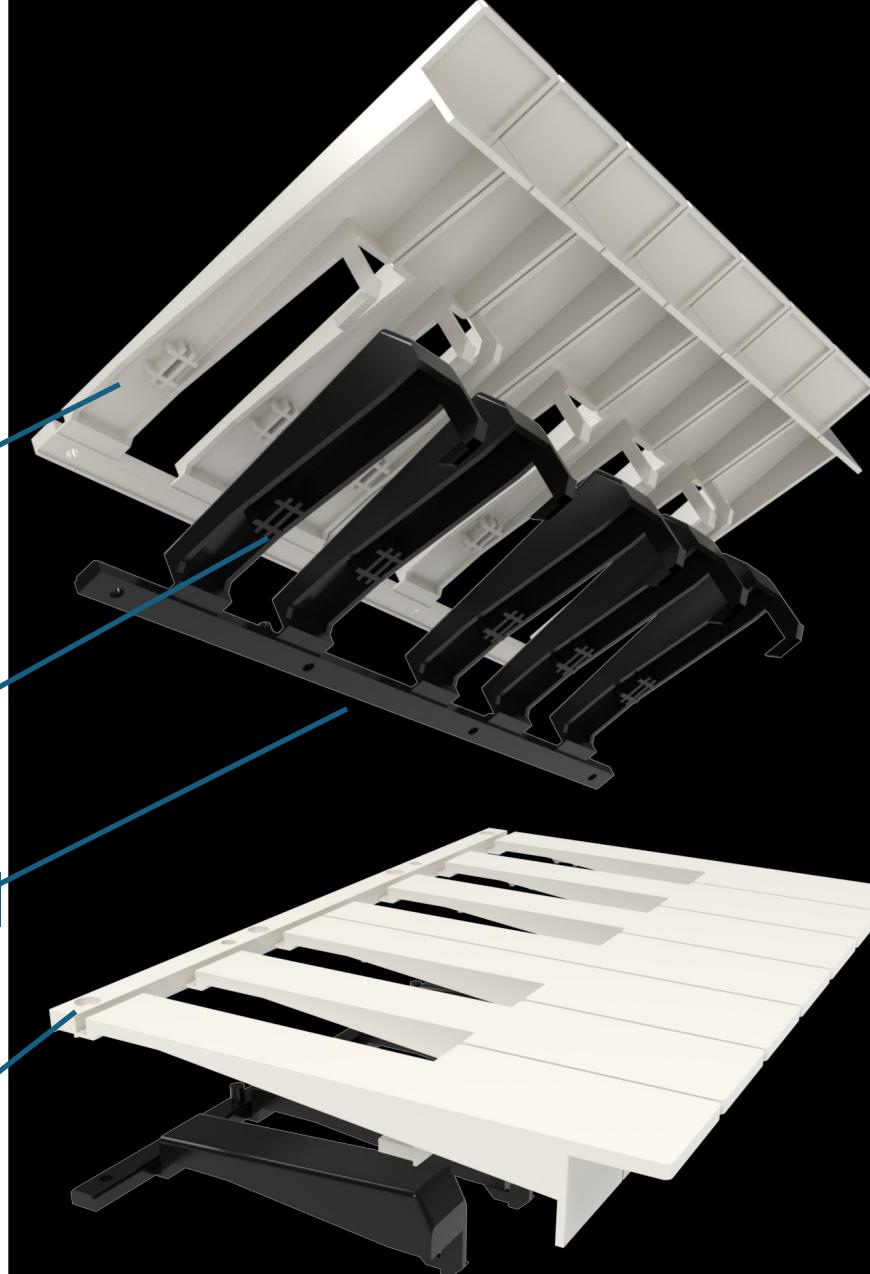
Linear pattern used to create similar profiles across the whole part



Derived and master modeling used to create parts in tandem that change together when updated

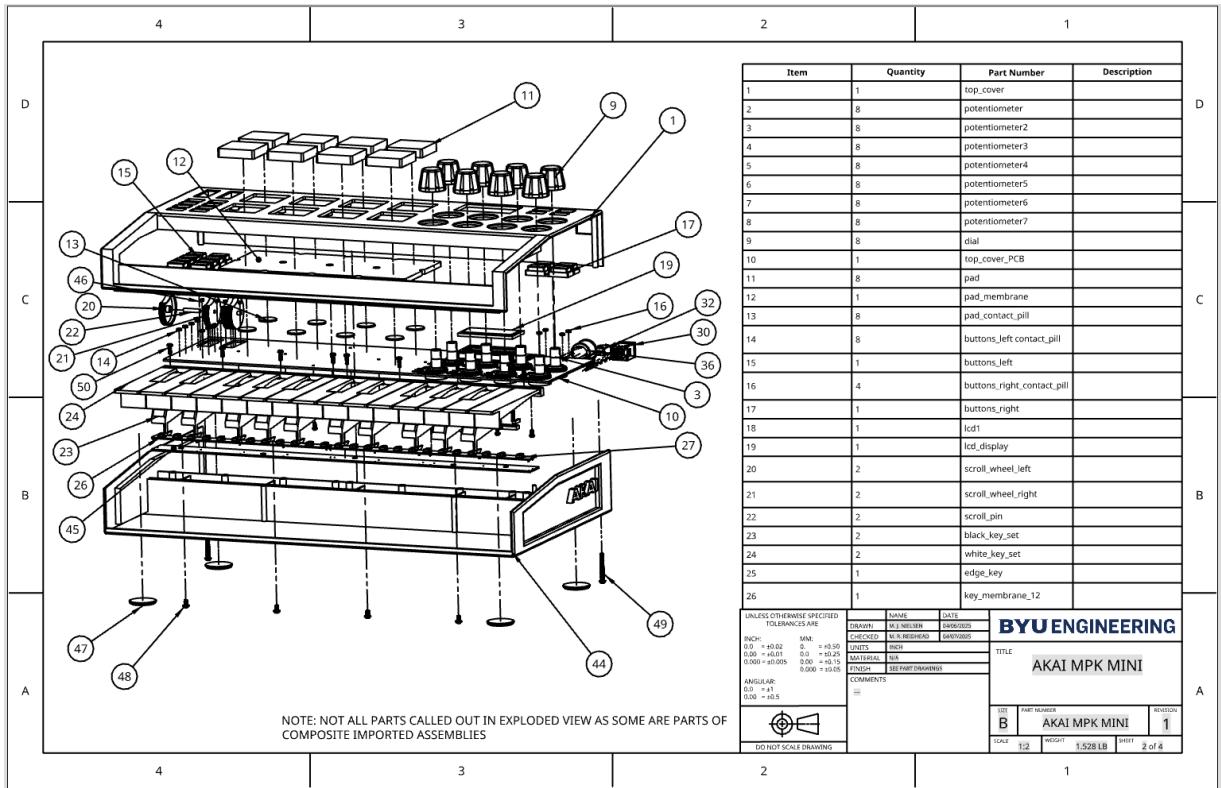


Hole feature used to create countersunk profile for screws

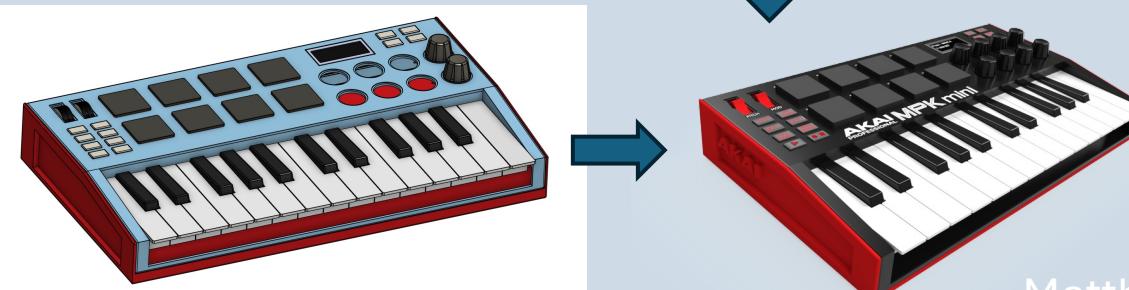
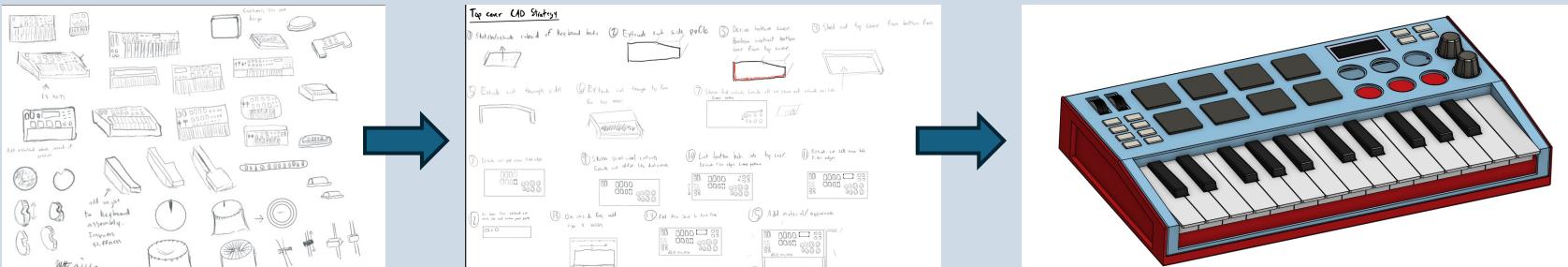


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AKAI MPK mini Next Generation



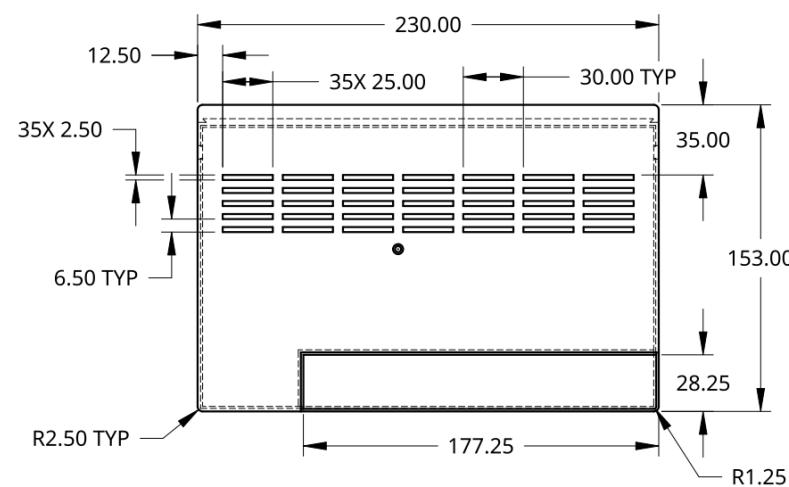
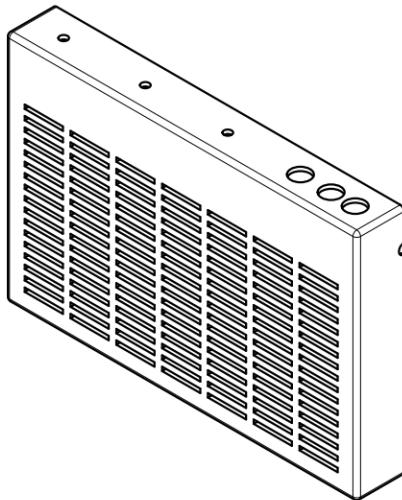
- Over 25 parts created with robust CAD models
- Analysis tests carried out to improve model quality



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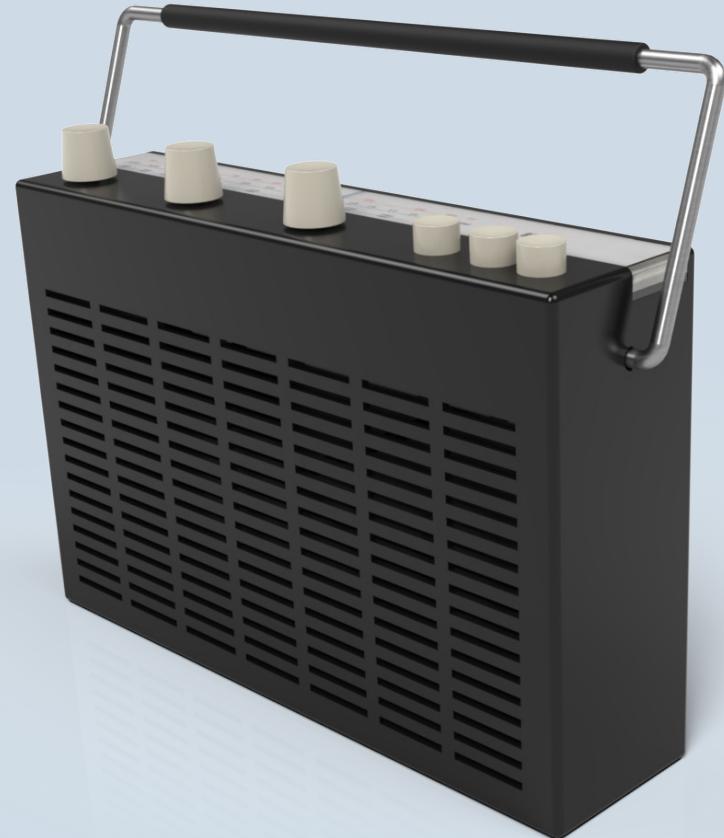
Braun T540 Radio Assembly

| 3 hours



Parts Modeled:

- Front Cover
- Back Cover
- Handle
- Handle Grip
- Button
- Added decal



Matthew J. Nielsen

Folding Quadcopter Drone

Collaborative Onshape Project

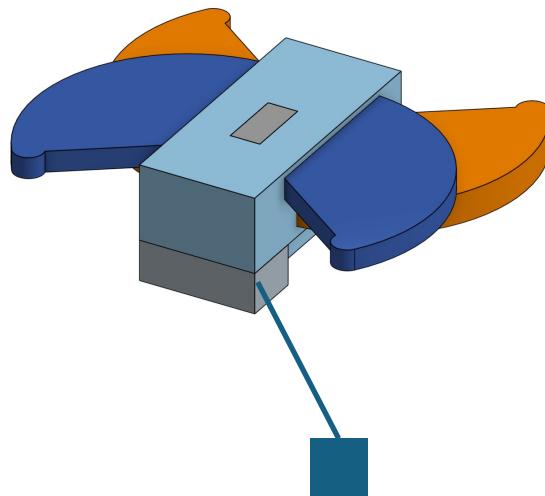
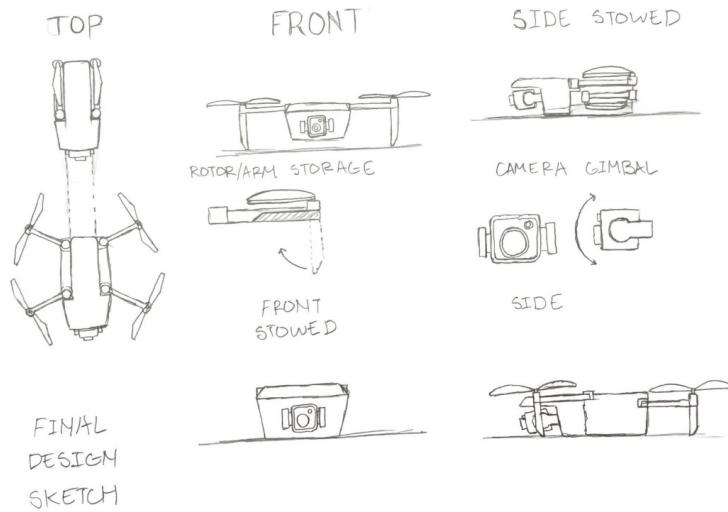


Contributors:

- **Body: Matt Nielsen**
- Arms/motors: Dalton White
- Core/electronics: Jared Eberhard
- Camera/gimbal: Ethan Adair

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Folding Quadcopter Drone



Master space allocations used to prevent interference between subsystems

Image of DJI Mavic drone used to sketch general shape

Offset surface and split tools used to master model top and bottom halves together

Screw bosses and ribs created to improve model quality

- All body parts created in a single part studio to allow for master modeling
- Master variable studio used to allow all parts and subsystems to update together

Body Subsystem

