Fire Manifesting App

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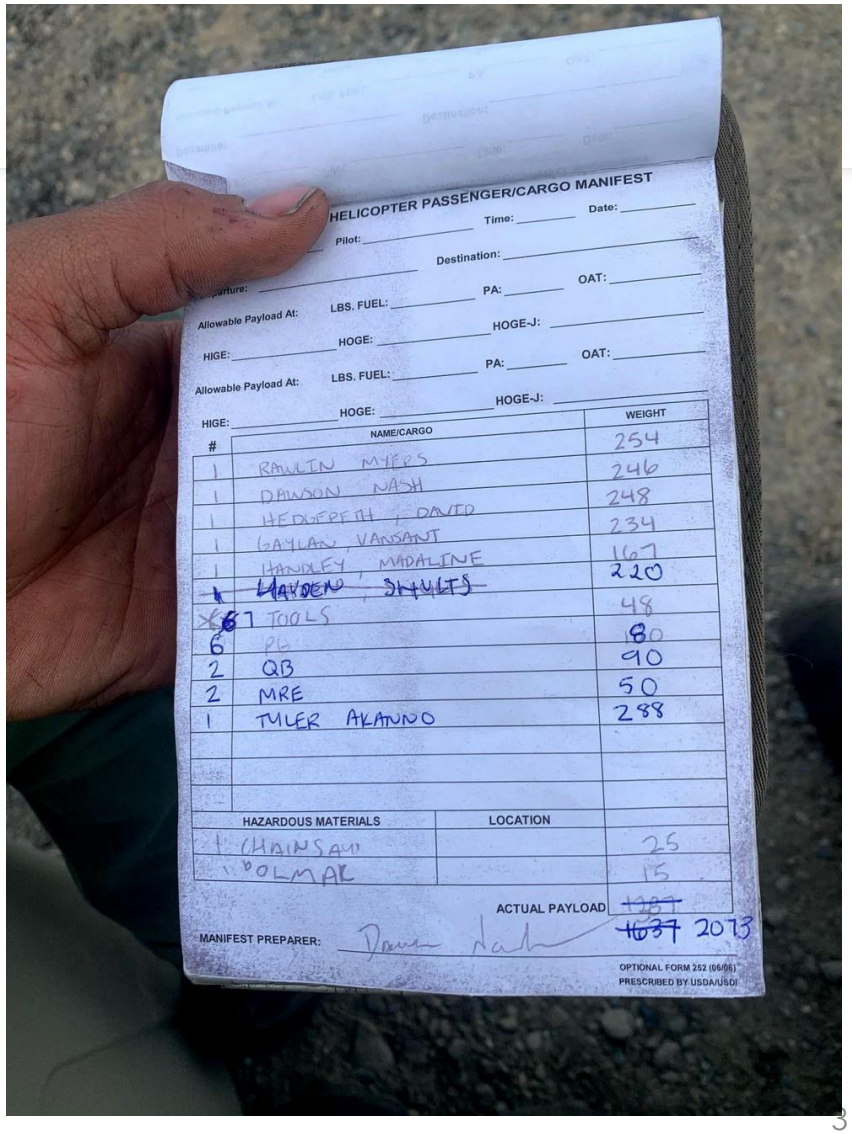
Alaska Wildland Firefighting Environment

- AK fire crews routinely travel to remote locations
- Crews are heavily reliant on air operations
- Must create detailed manifests

Swan Lake Fire ~ Sterling, AK, 2019

What are manifests?

- Record personnel and cargo weights
- Essential for weight compliance, crew safety, and operational efficiency
- Currently done on paper



Why is the app needed?

- Wildland fire can be a high-stress, time-sensitive environment
- Successful fire suppression requires rapid response and crew safety
- Paper manifesting is time-consuming

Swan Lake Fire ~ Sterling, AK, 2019

Our Goals

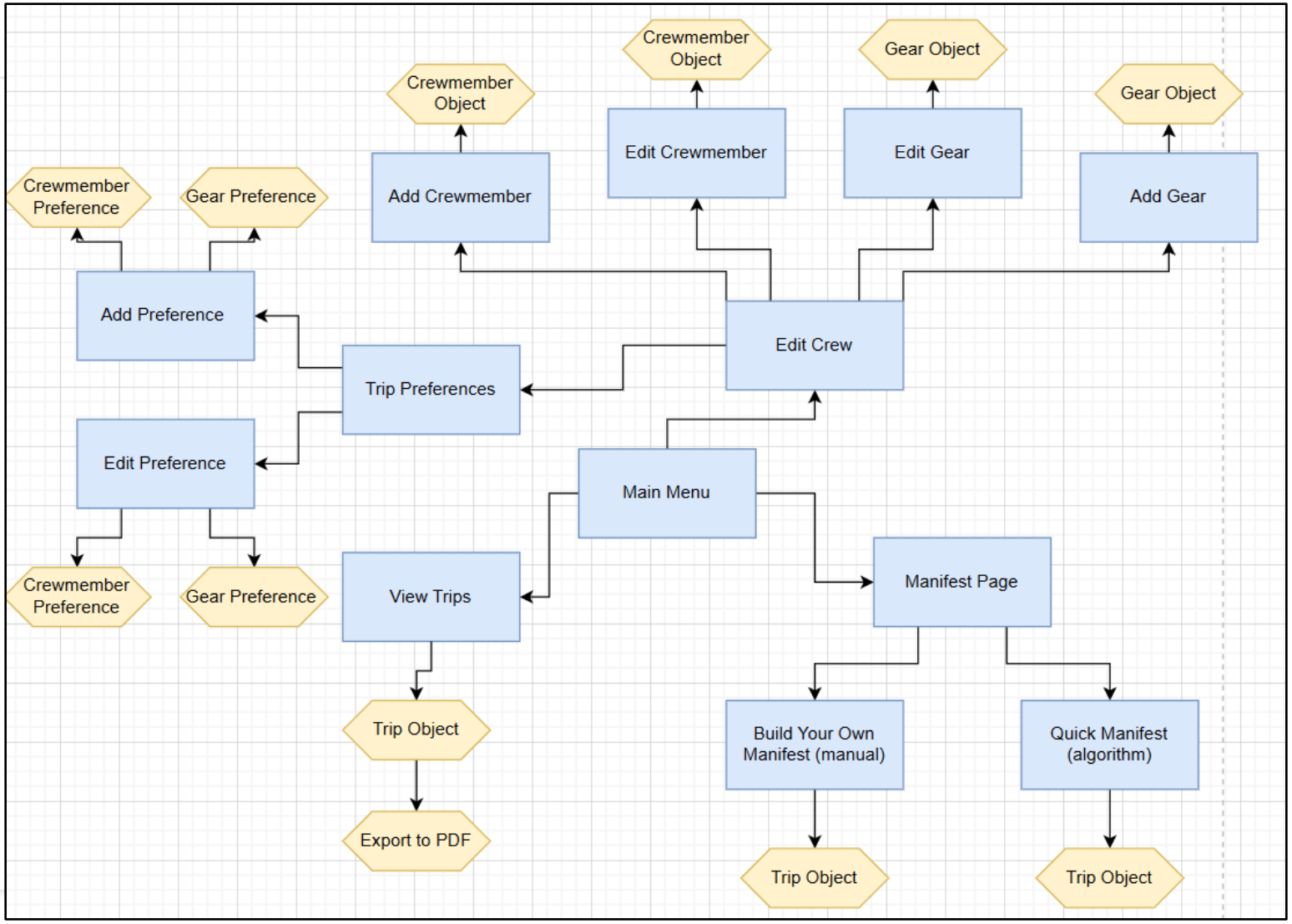
- Automate the manifesting process
- Simulate the mind of a firefighter
- Multi-platform mobile app
- Make the app easy to learn and use
- Backend sharing of crew, trip, and helicopter info

Technologies and Tools Used

- Flutter
  - Open-Source UI software development framework
- Hive
  - Native NoSQL database for Flutter
- Android Studio
- Xcode
- ChatGPT

Page layout

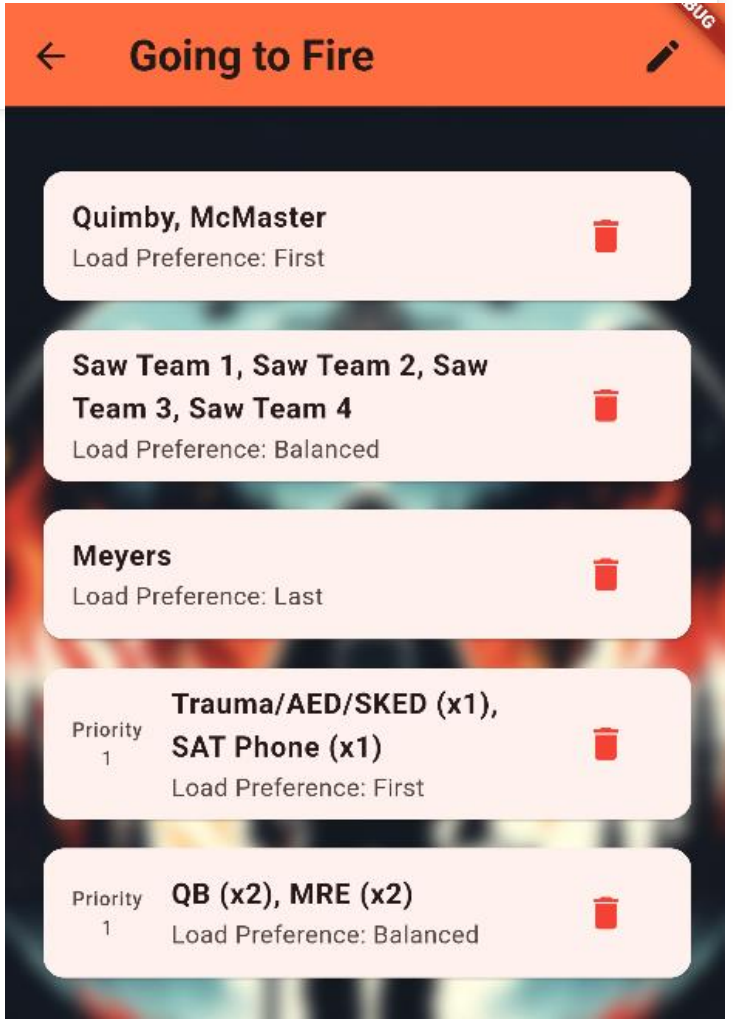
- Edit Crew
  - Add/Edit Crewmembers
  - Add/Edit Gear
  - Add/Edit Preferences
- Manifest
  - Algorithm Manifest
  - Build Your Own
- View Trips
  - Export to PDF



Load Calculating Algorithm

```
12      void loadCalculator(Trip trip, TripPreference? tripPreference)
366
```

- Simulating the firefighter thought-process
  - What needs to go first/last?
  - What cannot be separated?
  - What should be distributed across loads?
  - Are skillsets/gear evenly distributed?
  - Do load weights make sense?
  - Is everything accounted for?
- Challenges
  - Allowing freedom to customize algorithm while avoiding constraints



Demo

Conclusion

- Breaking down big tasks into small, achievable milestones can make end goals obtainable
- Computers are fast
  - Algorithm kept up with UI
- A semester is a very short amount of time

Future Work

- Backend database
  - In app Manifest sharing
  - Crew / Helicopter sharing
- Multi crew / loadout support
- Built-in gear weight search feature
- More Robust UI and Algorithm testing
- Several other QoL / usability features

Try It Yourself!

- IOS

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Questions?