🚀 Quick Start Guide

Get the 3I/ATLAS Flight Tracker running in 5 minutes!

Prerequisites

- Node.js 18+ installed
- Python 3.8+ installed
- Git (to clone or copy files)

Step 1: Generate Trajectory Data (1 minute)

```
cd backend
python3 generate_atlas_trajectory.py
```

Expected output:

```
======================================================================
3I/ATLAS TRAJECTORY DATA GENERATION
======================================================================
✓ Fetched 1093 data points for 3I/ATLAS
✓ Generated 274 points for earth
✓ Generated 274 points for mars
✓ Generated 137 points for jupiter
✓ Static data saved
✓ Event markers saved
======================================================================
```

Step 2: Install Dependencies (2 minutes)

```
cd ../frontend
npm install
```

Step 3: Start Development Server (30 seconds)

```
npm run dev
```

Step 4: Open in Browser

Navigate to: **http://localhost:5173**

🎮 Controls

- **Timeline Slider**: Scrub through time
- **Play/Pause**: Toggle animation

- **Speed**: Change playback speed (0.5x - 25x)
- **Camera Toggle**: Switch between “Riding with ATLAS” and Free Cam
- **Timeline Buttons (Left)**: Jump to key events
- **Mouse (Free Cam)**:
- Left drag: Rotate
- Right drag: Pan
- Scroll: Zoom

🌟 Key Events to Try

Click these buttons on the left side:

1. **Discovery** (July 1, 2025)
2. **Mars Flyby** (October 3, 2025)
3. **Perihelion** (October 29, 2025) - Watch the glow effect!
4. **Jupiter Approach** (March 16, 2026)

📱 Test on Mobile

1. Get your local IP: `ifconfig` or `ipconfig`
2. Open on mobile: `http://YOUR_IP:5173`

🛠️ Troubleshooting

Comet not visible?

- Check the timeline - you might be at a date before discovery
- Click “Reset” button to go to the beginning

Performance issues?

- Try closing other browser tabs
- Reduce star count in Starfield component
- Use Free Cam instead of Follow mode

Data loading fails?

- Make sure you ran `python3 generate_atlas_trajectory.py`
- Check that files exist in `frontend/public/data/`

Port already in use?

```
npm run dev -- --port 5174
```

📦 Production Build

Ready to deploy?

```
npm run build
npm run preview
```

Output in: `frontend/dist/`

🔗 Next Steps

- **Integration**: See `docs/INTEGRATION.md`
- **Deployment**: See `docs/DEPLOYMENT.md`
- **API Reference**: See `docs/API.md`
- **Full README**: See `README.md`

🎨 Quick Customization

Change Colors

Edit `frontend/tailwind.config.js`:

```
colors: {
  'atlas-green': '#00ff88',  // Change to your color
}
```

Change Initial Speed

Edit `frontend/src/App.tsx`:

```
<Atlas3DTrackerEnhanced
  initialSpeed={5}  // Change from 2 to 5
/>
```

Change Camera Position

Edit `frontend/src/components/FollowCamera.tsx`:

```
offset={new THREE.Vector3(10, 5, 10)}  // Farther camera
```

✅ Success Checklist

- [ ] Data generated (check `frontend/public/data/`)
- [ ] Dependencies installed (check `node_modules/`)
- [ ] Dev server running (check http://localhost:5173)
- [ ] Comet visible and moving
- [ ] Timeline controls working
- [ ] Event buttons responsive
- [ ] Educational content displays

💡 Pro Tips

1. **Follow Mode**: Best for cinematic experience
2. **Free Cam**: Best for exploration
3. **2x Speed**: Good balance for viewing
4. **Perihelion Event**: Most dramatic visuals

5. **Mobile**: Hold phone horizontally

🚨 Common Errors

“Cannot find module ‘@react-three/fiber’“

```
cd frontend
npm install
```

“Failed to load trajectory data”

```
cd backend
python3 generate_atlas_trajectory.py
```

“Port 5173 already in use”

```
npm run dev -- --port 5174
```

📞 Need Help?

1. Check the full README.md
2. Review docs/INTEGRATION.md
3. Open GitHub issue
4. Check browser console for errors

Enjoy your journey with 3I/ATLAS! 🌠

Estimated time from start to finish: 5 minutes