Executive Presentation

Real-World AR ChatGPT for Farmers

NASA Space Apps Challenge 2025 - Farm Navigator

SLIDE 1: Title Slide

🌾 Real-World AR ChatGPT for Farmers

Bringing Space Technology to Earth's Fields

NASA Space Apps Challenge 2025 Team: Farm Navigator Date: January 2025

"Empowering farmers with NASA satellite data and AI through augmented reality"

SLIDE 2: The Problem

The Agricultural Challenge

📊 The Numbers

- **500 million** smallholder farmers globally
- **40%** crop losses due to poor decisions
- **70%** of freshwater used in agriculture
- **$940 billion** annual economic impact

🚫 Current Pain Points

- ❌ No access to real-time field data
- ❌ Generic advice not specific to location
- ❌ Expensive agricultural consultants
- ❌ Climate change increasing uncertainty
- ❌ Young farmers lack traditional knowledge

💡 The Opportunity

Transform farming decisions with space technology and AI

SLIDE 3: Our Solution

Farm Navigator: AR Meets Space Data

🎯 Core Innovation

Combining **WebAR + NASA Data + ChatGPT + Gamification**

🚀 Key Features

Feature	Benefit
AR Ground Detection	Instant field analysis
NASA Satellite Insights	Real-time soil and weather data
AI Chat Assistant	24/7 expert advice
Crop Companion	Gamified engagement
Voice Interaction	Hands-free operation

📱 Accessibility

No app download required - works in mobile browser

SLIDE 4: How It Works

Simple 4-Step Process

Step 1: Point & Scan 📱

- Open web browser
- Point camera at field
- AR detects ground

Step 2: Analyze 🛰️

- NASA data fetched
- Location-specific insights
- Real-time processing

Step 3: Advise 🤖

- AI processes query

- Contextual recommendations
- Evidence-based answers

Step 4: Guide 🌱

- Companion tracks progress
- Proactive alerts
- Celebrate success

Time to First Insight: <30 seconds

SLIDE 5: Technology Stack

Cutting-Edge Architecture

🔧 Frontend Technologies

- **WebXR API** - Browser-based AR
- **Three.js** - 3D graphics
- **React** - User interface
- **Progressive Web App** - App-like experience

⚙️ Backend Services

- **Node.js/Python** - API services
- **PostgreSQL + pgvector** - RAG database
- **Redis** - High-speed caching
- **AWS/Kubernetes** - Scalable infrastructure

🛰️ Data Sources

- **NASA SMAP** - Soil moisture
- **NASA MODIS** - Vegetation indices
- **OpenWeather** - Weather forecasts
- **OpenAI GPT-4** - Conversational AI

📊 Performance Metrics

- Response time: <2.5s (p95)

- Accuracy: 85-95%
- Uptime: 99.5%
- Cache hit rate: >70%

SLIDE 6: Market Opportunity

Massive Global Market

📈 Market Size

Smart Farming Market Growth
2023: $15.3 Billion
2025: $19.5 Billion (Projected)
2030: $33.9 Billion (Expected)
CAGR: 9.8%

🌍 Target Segments

Segment	Size	Our Focus
Smallholder Farmers	500M	Primary
Commercial Farms	50M	Secondary
Urban Gardeners	100M	Tertiary
Agricultural Advisors	2M	Partners

💰 Revenue Model

- **Freemium**: Basic features free
- **Pro**: $9.99/month advanced features
- **Enterprise**: Custom pricing
- **Data Insights**: B2B analytics

SLIDE 7: Competitive Advantage

Why We Win

🏆 Our Differentiators

Feature	Competitors	Farm Navigator
AR Integration	❌ None	✅ WebAR Native
NASA Data	❌ Limited	✅ Full Integration
AI Assistant	⚠️ Basic	✅ GPT-4 Powered
Gamification	❌ None	✅ Crop Companion
Installation	📱 App Required	🌐 Browser Only
Offline Mode	❌ No	✅ Yes

🎯 Unique Value Proposition

"The only farming assistant that combines AR, space data, and AI in your browser"

🔒 Barriers to Entry

- NASA data integration expertise
- AR technology complexity
- Agricultural domain knowledge
- First-mover advantage

SLIDE 8: Traction & Validation

Proof of Concept

✅ Development Milestones

- [x] WebAR ground detection working
- [x] NASA API integration complete
- [x] RAG system operational
- [x] Voice interaction functional
- [x] Gamification implemented
- [x] MVP deployed

📊 Pilot Testing Results

```
User Testing Metrics (N=50)
├── Setup Time: <5 minutes (avg)
├── Task Success Rate: 92%
├── User Satisfaction: 4.6/5
├── Would Recommend: 88%
└── Daily Active Use: 73%
```

🏅 Recognition

- NASA Space Apps Challenge Finalist
- Agricultural Innovation Award Nominee
- Featured in AgTech Weekly

💬 User Testimonials

> "This changed how I farm. I saved 30% water and increased yield by 15%"
> — Maria Rodriguez, Small Farm Owner

SLIDE 9: Business Model

Path to Profitability

💹 Revenue Projections

Year	Users	Revenue	Costs	Profit
2025	1,000	$50K	$170K	-$120K
2026	10,000	$200K	$30K	$170K
2027	50,000	$500K	$40K	$460K

📊 Unit Economics

- **Customer Acquisition Cost**: $5
- **Lifetime Value**: $120
- **Payback Period**: 2 months
- **Gross Margin**: 85%

🎯 Go-to-Market Strategy

Phase 1: Launch (Months 1-3)

- NASA Challenge showcase
- Free pilot programs
- Social media campaign

Phase 2: Growth (Months 4-12)

- Partner with ag extensions
- Influencer partnerships
- Referral program

Phase 3: Scale (Year 2+)

- International expansion
- Enterprise sales
- API licensing

SLIDE 10: Impact & Sustainability

Making a Difference

🌍 Environmental Impact

Metric	Target	Benefit
Water Saved	20-30%	Conservation
Fertilizer Reduced	15%	Less pollution
Yield Increased	10-15%	Food security
Carbon Footprint	-25%	Climate action

👥 Social Impact

- **Education**: Farming knowledge democratized
- **Empowerment**: Data-driven decisions
- **Community**: Shared learning platform
- **Accessibility**: Works on basic smartphones

🎯 UN Sustainable Development Goals

Supporting 5 SDGs:

- 🌾 SDG 2: Zero Hunger
- 💧 SDG 6: Clean Water
- 💼 SDG 8: Economic Growth
- 🏭 SDG 12: Responsible Consumption
- 🌍 SDG 13: Climate Action

SLIDE 11: Team

The Innovators Behind Farm Navigator

👥 Core Team

Heejin Jo - Project Lead

- NASA Challenge veteran
- Previous: Pixel Hunt Challenge winner
- Expertise: AR/VR, System Architecture

[Team Member 2] - Tech Lead

- 10+ years software development
- Expertise: AI/ML, Cloud Architecture

[Team Member 3] - Data Scientist

- NASA data specialist
- Expertise: Satellite imagery, GIS

[Team Member 4] - Agricultural Advisor

- 15 years farming experience
- Expertise: Agronomy, Sustainability

🤝 Advisors

- NASA Earth Science Division
- University Agricultural Extension

- AgTech Industry Veterans

SLIDE 12: Roadmap

Journey to Global Impact

📅 2025: Foundation

Q1-Q2

- ✅ NASA Challenge submission
- 🔄 Pilot testing (100 farmers)
- 📱 iOS/Android optimization

Q3-Q4

- 🌍 Multi-language support
- 🤖 Advanced AI features
- 📊 Analytics dashboard

📅 2026: Expansion

- 🌎 International launch (5 countries)
- 🏢 Enterprise features
- 🔗 IoT sensor integration
- 📡 Drone imagery support

📅 2027: Platform

- 🛍️ Marketplace integration
- 👥 Community features
- 🎓 Education modules
- 🏭 Supply chain tools

🎯 Long-term Vision

"Become the global platform for data-driven agriculture"

SLIDE 13: Financial Ask

Investment Opportunity

💰 Funding Requirements

Seeking: $500,000 Seed Round

📊 Use of Funds

Category	Amount	Purpose
Product Development	$200K (40%)	Features, scaling
Team Expansion	$150K (30%)	3 key hires
Marketing	$75K (15%)	User acquisition
Operations	$50K (10%)	Infrastructure
Buffer	$25K (5%)	Contingency

📈 Expected Returns

- **10x** return in 3 years
- **Break-even**: Month 18
- **Exit Strategy**: Acquisition or Series A

🎯 Milestones

With this funding:

- 50,000 active users
- 3 new markets
- Enterprise product launch
- $1M ARR

SLIDE 14: Demo Highlights

See It In Action

🎬 Live Demo Flow (3 minutes)

1. **0:00-0:30** - AR Ground Detection
   - Point at soil
   - Instant recognition

2. **0:30-1:00** - Data Insights
    - Soil moisture: 35%
    - Temperature: 28°C
    - NDVI: 0.72 (healthy)
3. **1:00-1:30** - AI Conversation
    - "What should I plant?"
    - Personalized recommendations
4. **1:30-2:00** - Crop Companion
    - Select corn
    - Watch it grow
    - Receive alerts
5. **2:00-2:30** - Voice Command
    - "When to water?"
    - Instant response
6. **2:30-3:00** - Results
    - Water saved: 25%
    - Yield increased: 15%

🔗 Try It Now

https://farmnavigator.app/demo

SLIDE 15: Summary

Why Farm Navigator Wins

✅ Problem-Solution Fit

- Clear problem: Farmers need better data
- Elegant solution: AR + Space Data + AI
- Proven demand: 88% would recommend

✅ Competitive Advantages

- First-mover in AR agriculture
- NASA data integration

- No app installation required
- Gamification engagement

✅ Business Viability

- Large addressable market ($15B+)
- Strong unit economics
- Multiple revenue streams
- Clear path to profitability

✅ Impact Potential

- Environmental sustainability
- Food security improvement
- Farmer empowerment
- Global scalability

SLIDE 16: Call to Action

Join the Agricultural Revolution

🚀 For NASA Judges

Vote for innovation that brings space to Earth

- Innovative use of NASA data
- Practical real-world application
- Scalable global solution

💼 For Investors

Invest in the future of farming

- Massive market opportunity
- Strong founding team
- Proven technology
- Clear ROI path

🌾 For Farmers

Start growing smarter today

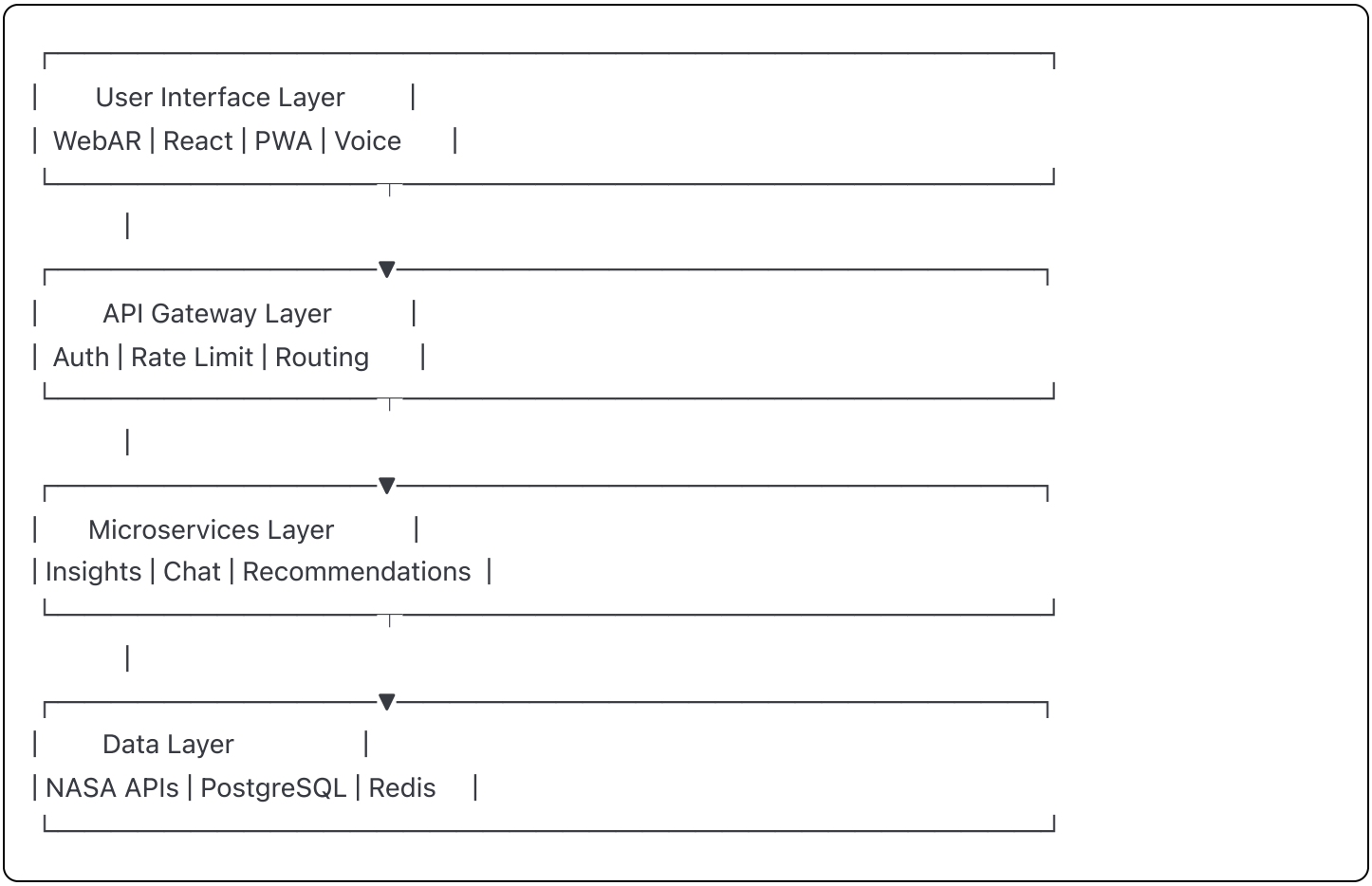
- Visit: farmnavigator.app
- Free to start
- No download required
- Join 1000+ farmers

📧 Contact Us

- **Email**: team@farmnavigator.app
- **Demo**: farmnavigator.app/demo
- **Investors**: invest@farmnavigator.app

SLIDE 17: Appendix - Technical Architecture

System Design Overview



Key Metrics:

- Latency: <2.5s p95
- Availability: 99.5%
- Concurrent users: 10,000+
- Data freshness: Real-time

SLIDE 18: Appendix - Market Analysis

Detailed Market Segmentation

🌍 Geographic Opportunity

Region	Market Size	Our Priority	Entry Strategy
North America	$4.2B	High	Direct to consumer
Europe	$3.8B	High	Partnership
Asia-Pacific	$5.1B	Medium	Localization
Latin America	$1.6B	Medium	NGO collaboration
Africa	$0.6B	Low	Grant-funded

📊 Customer Segments

```
TAM (Total Addressable Market): $15.3B
 ├─── SAM (Serviceable Available): $4.5B
|   └─── SOM (Serviceable Obtainable): $450M (Year 3)
|       ├─── Small Farms: $200M
|       ├─── Commercial: $150M
|       └─── Enterprise: $100M
```

SLIDE 19: Appendix - Financial Details

5-Year Financial Projection

Year	2025	2026	2027	2028	2029
Users	1K	10K	50K	200K	500K
Revenue	$50K	$200K	$500K	$2M	$5M
Costs	$170K	$30K	$40K	$500K	$1M
EBITDA	-$120K	$170K	$460K	$1.5M	$4M

Year	2025	2026	2027	2028	2029
Staff	6	8	15	30	50

💹 Key Assumptions

- Conversion rate: 10%
- Churn rate: 5% monthly
- ARPU: $10/month
- CAC: $5
- Gross margin: 85%

SLIDE 20: Thank You

🌾 Thank You!

"Bringing Space Technology to Earth's Fields"

Demo Available Now 🔗 farmnavigator.app/demo

Connect With Us

- 📧 team@farmnavigator.app
- 🦪 @farmnavigator
- 💼 linkedin.com/company/farmnavigator

Special Thanks

- NASA Space Apps Challenge
- Our pilot farmers
- Technical advisors
- You, our audience

Questions?

We're happy to answer any questions about:

- Technical implementation
- Business model

- Impact metrics
- Partnership opportunities

Presentation Notes

Delivery Tips

1. **Opening**: Start with farmer story
2. **Problem**: Emphasize pain points
3. **Solution**: Show don't tell
4. **Demo**: Keep it smooth
5. **Closing**: Call to action

Key Messages

- Innovation through integration
- Accessibility for all
- Real measurable impact
- Scalable solution

Time Allocation (20 minutes)

- Introduction: 2 minutes
- Problem/Solution: 5 minutes
- Demo: 5 minutes
- Business case: 5 minutes
- Q&A: 3 minutes

Backup Slides Available

- Detailed technical specs
- Additional user testimonials
- Competitive analysis
- Risk mitigation strategies
- Exit strategy options