AI Tech Sprint 3: ASPIRE Demonstrator
Information Session
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Content

1. Intro to VA National AI Institute
2. History of AI Tech Sprints
3. Details on ASPIRE Project
4. Introducing the ASPIRE Tech Sprint
5. Summary and Questions
The VA NAII
Why AI at VA?

- 9,100,000+ patients, making VA the largest integrated healthcare system in the United States
- 120,000+ doctors and nurses in VA, with nearly 75% of all US doctors and nurses trained in VA hospitals
- 800,000+ genomic donations tied to medical records, the largest such database in the world
- 10,000,000,000+ medical images, with 1 billion more per year; one of the world’s largest medical image repositories
- 1,200+ medical facilities across all 50 states and US territories
- 2,180,000+ telehealth episodes of care per year
- 727,000+ Veterans served by telehealth per year
The NAI seeks to establish the Department of Veterans Affairs as the preeminent organization for research, development, and training of Artificial Intelligence with impact on a global scale, ensuring the health and well-being of our Veterans.
Groundwork: Guiding Documents

Executive Orders 13859 and 13960
- Maintaining American Leadership in Artificial Intelligence
- Promoting the Use of Trustworthy Artificial Intelligence in the Federal Government

Strategies
- National AI R&D Strategy (2019)
- VA AI strategy, VA/DOD strategies

2021 National Defense Authorization Act (NDAA)
- NDAA Fiscal Year 2021 called for a National AI Initiative to coordinate AI research and policy across the federal government.
Welcome to AI.gov, home of the National AI Initiative and connection point to ongoing activities to advance U.S. leadership in AI. The National AI Initiative Act of 2020 (DIVISION E, SEC. 5001) became law on January 1, 2021, providing for a coordinated program across the entire Federal government to accelerate AI research and application for the Nation’s economic

RECENT PUBLICATIONS

- (DoD) Summary of the Joint All-Domain Command and Control Strategy, 03/17/2022
- (DOE/NIST) Towards a Standard for Identifying and Managing Bias in Artificial Intelligence, 03/15/2022
- (OSTP) Request for Information (RFI) on the Update of the National
Trustworthy AI Principles

- Lawful and respectful of our Nation’s values
- Purposeful and performance-driven
- Accurate, reliable, and effective
- Safe, secure, and resilient
- Understandable
- Responsible and traceable
- Regularly monitored
- Transparent
- Accountable

Federal Register :: Promoting the Use of Trustworthy Artificial Intelligence in the Federal Government:

Ethical Applications of Artificial Intelligence: Evidence From Health Research on Veterans:
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8209529/
We use data as a bidirectional link between government and users of that data across industry, government labs, and others.

- Large, unique data sources (on clinical trials, patents, experimental therapeutics, patients)
- Veteran and Expert perspectives
- Technical expertise and user-based feedback
- Demo and funding opportunities
- Innovative product ideas
- Technical AI/ML expertise
- Trusted AI solution development through collaboration
- Product development expertise
Recently Concluded—AITS: Veterans Not Currently Served

CONCEPT
- Invite teams to produce AI tools for “veterans not currently served by the VA”
- 60 applicants from industry, academia, and other non-governmental organizations

PARTNERSHIP
- Pair each team with a subject matter expert: VA clinicians and staff to guide the development
- 44 teams began this process with over 90% SME pairing

ACCESS TO DATA
- Teams combine private data sources with VA data and expertise in an AI-enabled tool
- All teams have data access through the VA Open Data Portal

RESULTS
- Proposals for potential pilot, development, or contract with VA
- 32 teams produced complete demos for this experience
AI Tech Sprint Results: Tailoring Physical Therapy remotely with wearables

- Veterans undergoing physical therapy or rehabilitation may have more at-home guidance using wearable technology

- Patients opt in and receive wearable sensors compatible with the Holmz proprietary platform during their visit to PT, which allow for monitored PT outside the doctor's office

- Holmz provides applies a mix of adaptive, explainable AI to make sense of a combination of pressure, motion, and other signals to provide actionable assessments

- Data can be examined during clinical visits, and provides many opportunities for personalizing PT
AI Tech Sprint Results: Suicide Prevention System

• VA operates a Veterans Crisis Line (VCL) available 24/7 to all veterans. Callers are sent a survey after each visit by the support team Vsignals.

• Survey answers are plain text and screened by an antiquated rules-based system, resulting in over 90% false positive rate.

• The Suicidal Ideation Engine (SSIE) we are co-developing will apply natural language processing to improve message triage.

• This system was prototyped using publicly accessible texts using the HHS/VA Blue Button System API.

• We are piloting their prototype on a selection of VSignals messages in the Arches environment in VA Enterprise Cloud computing resources.
AI Tech Sprint Results: Computer Aided Diagnostics for Teledermatology

• This prototype was developed by training a deep learning computer vision algorithm to distinguish between seven types of skin lesions

• A public database of 10,029 skin lesion images were divided into a set of 8,018 for development and 2,011 for validation

• The top performing method achieved a near perfect 0.94 AUC

• This early prototype allows providers to drag and drop images for rapid analysis, including an assessment of the image quality

• Providers get immediate feedback on low contrast, blurry, or otherwise unusable images, as well as a recommended diagnosis
All Services Personnel and Institutional Readiness Engine
Assessment & Recruitment
• Find the right people, fast
  • Computer Adaptive Competency Assessment
  • AI Power National Talent Survey Tools

Education & Certification
• Fill urgent needs now with current personnel
  • Fine grained with novel mapped learning

Career Transitions & National Security
• Facilitate retention of critical human capital
  • Job and curriculum code mapping across .mil, .gov, and .edu
  • Information and Asset Tracking
Research & Design
• Gathering use cases
• Identifying the bleeding edge of talent and technology
• Designing and developing the Common Data Model (CDM)

Building the Common Data Model & SBOM
• Supporting ease and effectiveness of integration for scalability
• Addressing 2021 Executive Order
• Marketplace model for providers

Build & Deploy Computer Adaptive Assessments
• Assessments verify and validate applicant/personnel knowledge
• Results give HR easy to use metrics for assessing applications
**Competency Management System**
- Identification of the organizational skills, knowledge, behaviors and capabilities requirements
- Ability of current workforce to meet those requirements on an individual, team and organization wide level

**Learning Development System**
- Personalized and adaptive learning pathways
- Focused microlearning

**Personnel Management Functions**
- With a CDM and SBOM all other parts can be built in parallel given support
- Currently, the assessments prototype is the first expected to begin
Anthro-Engine Recruiting
- Finding talent
- Determining trends
- Understanding the landscape

Certificates, Incentives, and Offramps
- Consistent standards will allow for training etc. to be recognized gov’t-wide
- Benchmarks can be tied to incentives
- Mapping supports career shifts

Tracking and other Security Functions
- Security of the system comes from its build, housing, and features
- Also, by having records of who is learning what and transferring where TEAMS can serve a NatSec function
Announcing a new Sprint
AI Tech Sprint Roadmap

0: Creating the Future of Health Care
• Coincided with the founding of the VA NAI2

1: Veterans Not Currently Served by VA
• Lead to various pilot projects within the VA

2: ASPIRE Demonstrator
• Create a demonstrator for the ASPIRE program

3: Imaging Sprint
• Currently in development for Q2 2023

4 and Beyond
• AITS to be offered annually
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Person A
Encoding A

Person A

Training Path A

Milestone 1
September 19
Scoring Criteria – Phase 1 (Aug 8 - Sept 19)

• Scored by NAII Staff
  1. Accurate Computerized Adaptive Assessment
  2. Learning Management System
  3. Quality of User Interface and Software Stability
  4. Organization

• Six finalists selected at the end of phase 1
Milestone 2
November 7

Novice

Intermediate

Expert

0.20

0.50

0.90
Scoring Criteria – Phase 2 (Sept 26 – Nov 7)

• Two-part scoring
  • Scored by Panel of Senior VA Experts, same criteria as before
  • Beta Testing Accuracy Metrics
• A total of $150,000 will be awarded to finalists based on standing
Key Dates

1. Applications Due: Aug. 1, 2022
2. Teams Selected: Aug. 5, 2022
3. Sprint Kickoff: Aug. 8, 2022
4. Sprint Concludes: Nov. 7, 2022
5. Demo Day: Nov. 14, 2022 (est)
AITS 2: ASPIRE

The VA invites interested teams to apply for our latest AI Tech Sprint and build a demonstrator platform for the cross-agency ASPIRE Employee Education program.

Key Facts

- Prizes awarded: $150,000 to the top 6 teams
- Applications Due: August 1, 2022
- Teams Notified: August 5, 2022
- Sprint Dates: August 8 – November 7, 2022

More Info

- Challenge.gov
- Research.va.gov/NAII
tech-sprints.cfm
Thank You!
Questions?