Artificial Intelligence: The Tool to Revitalize Rural America

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Problem Statement

**TechSpark:** “A national civic program aimed at fostering greater economic opportunity and job creation through partnership with rural and smaller metropolitan communities.”

Through the application of technology, what tactical applications, including AI, can take advantage of the five TechSpark focus areas or current CSR programs in place?
Executive Summary

Empower every person and organization on the planet to achieve more.

How? Integrating Youth Empowerment with AI

**Rural Broadband**
Address the geographic areas that are most in need, community centers will be targeted as sources of broadband access.

**Digital Skills & Education**
Boost retention rates in tech-related educational programs through tailored programs that provide intelligent feedback.

**Digital Transformation**
Target local start-ups as sources of AI implementation to both boost rural economies and retain a young, talented workforce.

**Career Pathways**
Provide a community-focused career platform that boosts online employment search potential in rural areas.

**Nonprofits**
Allow nonprofits to apply for cash grants that provide the foundations for growth and job creation.

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Prepared solely for the Milgard Invitational Case Competition on Social Responsibility and for the use of our client.
Situation Analysis
Technology Today

Companies that use data-driven decision making achieve up to 6% higher productivity and output growth than their peers.

The “digital universe,” or the data created every year, will reach 180 zettabytes in 2025.

180,000,000,000,000,000,000,000!
2.2 The Digital Divide

48% of Americans envision a future where more jobs are lost than created due to AI.

While tech is expanding rapidly, it leaves behind a large portion of Americans.

Problems Plaguing Rural America

46.2 million people are spread across 72% of U.S. rural land area.

Shrinking

Aging

20% of the population in those rural counties is over the age of 62.

Median age of rural counties is 51, whereas in urban areas the median age is 43.
The Problem:
Youth Retention
3.1  Loss of Young Talent

From 1910 to 2010, the population of rural America declined to less than 20% of the overall population, and the median age has increased to 51.

A **lack of economic opportunity** leads to perpetuation of poverty

Talented youths move to cities to access **necessary tech resources**

Aging communities fail to attract new business, and poverty is perpetuated
Nonprofits

Digital Skills & Computer Science Education

Career Pathways

Digital Transformation Initiatives

Rural Broadband
Rural Broadband
Rural Broadband

39% of rural Americans lack access to broadband connection whereas only 4% of urban Americans lack this same access.

81% of young people would prefer not to live in their local communities as adults

Many young people leave rural areas due to lack of opportunity, education, and jobs

41% of schools, representing almost half of the nation’s students, lack proper connectivity
Rural Broadband

Infrastructure should be integrated which can tactically disseminate newly available broadband to rural areas.

Rural Americans are **7 to 12%** less likely than those in urban and suburban areas to have a **smartphone**, **traditional computer** or **tablet computer**

Need for improved high-speed internet service was considered the highest priority.
Rural Broadband
This process can be completed by tapping into community bases.

Our plan:
Community Driven Connection
Digital Skills & Computer Science Education
5.1 Digital Education

Building off of existing Microsoft programs provides a means of educating rural youth.

The TEALS program provides an *in-depth curriculum* taught by volunteers.

This program is *renowned for its success* at UC Berkeley and University of Washington, but it may not succeed in all contexts.
Digital Education

TEALS provides the foundation for a program which can be expanded into traditionally underserved areas.

TEALS fails to reach into rural areas because volunteers are less willing and less available to teach in remote zones.

The only way to reach these areas is through Massive Open Online Courses (MOOC), which only have a retention rate of 7-9%.

While a great program, one size does not fit all, so TEALS should be modified.
5.3 Digital Skills & Computer Science Education

Education can be transformed if integrated with AI machine learning algorithms.

Solution:

Smart Education with a Customized Approach

Intelligent Feedback + Individualized Material = Increased Retention
Digital Transformation Initiatives
Digital Transformation Initiatives

Microsoft’s Current Strategy provides an equation which can be adapted.

\[
\text{Start-ups and Local Businesses} + \text{Technology} = \text{Growth}
\]
6.2 Digital Transformation Initiatives

*Impact is maximized by focusing on start-ups in rural communities.*

<table>
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<tr>
<th>Start-ups and Local Businesses</th>
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**Risks**

- Over 50% of start-ups fail in the first 5 years
- Start-ups fail because of incompetence and lack of experience

**Rewards**

- More than 50% of start-up employees are below 30, compared to 42% at non-startups
- Studies show that “entrepreneurship is the key to stronger local and regional economies”
Digital Transformation Initiatives

Our recommendation combines the existing platform with tailored ideas.

Start-ups + Technology = Growth

Intro | Situation Analysis | Youth | The Five Core Areas | Impact | Appendix
Digital Transformation Initiatives

Our recommendation combines the existing platform with tailored ideas.

Involve youth in the revitalization of their communities, providing engaging and dynamic opportunities through entrepreneurship.

Start-ups + Technology = Growth
6.4 Digital Transformation Initiatives

Our recommendation combines the existing platform with tailored ideas.

- Involve youth in the revitalization of their communities, providing engaging and dynamic opportunities through entrepreneurship.
- Helps new companies make smart decisions and develop efficient business processes early.

Start-ups + Technology = Growth
Digital Transformation Initiatives

Our recommendation combines the existing platform with tailored ideas.

- **Start-ups** + **Technology** = **Growth**

Involve youth in the revitalization of their communities, providing engaging and dynamic opportunities through entrepreneurship.

Helps new companies make smart decisions and develop efficient business processes early.

Creates community generated opportunities through greater employment and financial sustainability.
Career Pathways
Career Pathways

Those who would benefit the most from online career connections are the ones who have the least access to such resources.

Microsoft’s recent acquisition of LinkedIn provides the resources to connect underserved individuals with career opportunities.

AI Initiatives such as Skillfully will help rural communities access the high-demand jobs that will raise their economic status.
Career Pathways

Intelligent connections through AI allow these career links to be a force for joining the community even further together.

An adjustment to LinkedIn’s algorithm can boost local businesses both as employers and as influencers.

Skillfully can be paired with Hirefully, a source for local businesses to effectively hire the employees with essential skills.
Support for Nonprofits

America’s 1.4 million nonprofits employ 11.4 million workers, approximately 10.3% of the private sector workforce, and pay them more than $532 billion annually in wages.

Foundations contributed over $58.46 billion in 2015 to community programs and projects.

62.8 million Americans volunteer time, money, and energy which comes out to $23.56/hr.

Allowing nonprofits to apply together for cash grants which will improve each other’s focus and strategy.
Support for Initiatives

Obstacles to success in the non-profit realm must be removed through the following methodologies.

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<tr>
<th>Rural Broadband</th>
<th>Digital Skills &amp; Education</th>
<th>Digital Transformation</th>
<th>Career Pathways</th>
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<tbody>
<tr>
<td>Continue to support strategic broadband outreach into underserved communities</td>
<td>Fund $5000+ volunteer fees, partner with institutions to subsidize computers &amp; program subscriptions</td>
<td>Continue to provide start-ups with capital, counseling, and advice to ensure success</td>
<td>Waive fees for local businesses’ posts and content to increase profits and publicize the companies.</td>
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Intelligent Coverage

Digital Skills & Computer Science Education

Career Pathways

Nonprofits

Digital Transformation Initiatives

Intelligent Coverage
Nonprofits

Smart Education

Community-Driven Connections

Tech-Driven Entrepreneurship

Intelligent Coverage
Support for Initiatives

Smart Education

Community-Driven Connections

Tech-Driven Entrepreneurship

Intelligent Coverage
Long-Term Impact
Impact on Microsoft’s Reputation

By investing in underserved communities, Microsoft is shaping a more empowered future workforce that will advance society.

Microsoft’s AI provides the jobs and knowledge to boost underserved economies.

A focus on youth development revitalizes rural communities.

The firm’s socially-responsible mission attracts stakeholders, encouraging the cycle to repeat.
Empower every person and every organization on the planet to achieve more.
Thank you!
Any Questions?
Appendix
Online Education Retention Rate

Daphne Koller, Wharton School of Business

**Koller:** This is what we see: **Enrolling is easy. It’s a matter of just clicking a button, and it’s free.** A lot of students do that. Then when it comes time for the course to actually begin, about 70% of students show up... **About 30% who start the first assignment will complete the last one.**

In terms of what you might traditionally call “retention” — that would be the number of students who submit the final assignment relative to the population who initially enrolled for the course. In those terms, we have a retention rate of **7% to 9%,** depending on the course.

http://knowledge.wharton.upenn.edu/article/moocs-on-the-move-how-coursera-is-disrupting-the-traditional-classroom/
University of Illinois - Five Strategies for Retaining and Attracting Youth to Rural Communities
By Pamela Schallhorn, M.A. March 17, 2015

#1 – Need for improved high-speed internet service

- This was considered the highest priority in almost all research material reviewed
- Enables students to take online classes remotely from universities located miles away
- Young people can diversify by using the Internet to earn additional income by starting online businesses
- Young people utilize high-speed internet for movies, television (streaming), phones, computer games, news, social networking and more. They consider it a staple.
Intelligent tutoring systems such as Carnegie Learning or Third Space Learning are helping teachers break free from the “one size fits all” approach. These one-to-one tutoring platforms leverage Big Data and learning analytics to provide tutors with real-time feedback about their students’ performances, strengths and weaknesses. The feedback helps teachers determine exact learning needs and skills gap of each student and provide supplemental guidance.

LinkedIn Algorithm

- Current Feed and Search Algorithms do not incorporate location based data
- Give local business partners “influencer” - like status, promoting content and postings
- Waive content sponsorship fees for partners

"Technology allows people in rural areas to reap the benefits of a rural lifestyle while not sacrificing access to learning opportunities," said Karen Cator, president of Digital Promise, a nonprofit that helps schools integrate technology. In rural areas, access to technology helps students become "digitally literate," she added. And it’s not just about formal education. "If you’re in a rural area, it doesn’t mean you have less-varied interests than students in other parts of the country," Cator said. "If you have access to technology, it’s much easier to ... pursue your interest, whether it is computer coding or technology or photography."

Start-Ups are the key to sustainable economic growth in small communities.

https://www.forbes.com/sites/kauffman/2013/01/10/with-strong-community-support-startups-create-more-than-jobs/#1ce6afa723e0
Key findings include the following:

- 10 percent of all Americans (34 million people) lack access to 25 Mbps/3 Mbps service.
- 39 percent of rural Americans (23 million people) lack access to 25 Mbps/3 Mbps.
  - By contrast, only 4 percent of urban Americans lack access to 25 Mbps/3 Mbps broadband.
  - The availability of fixed terrestrial services in rural America continues to lag behind urban America at all speeds: 20 percent lack access even to service at 4 Mbps/1 Mbps, down only 1 percent from 2011, and 31 percent lack access to 10 Mbps/1 Mbps, down only 4 percent from 2011.
- 41 percent of Americans living on Tribal lands (1.6 million people) lack access to 25 Mbps/3 Mbps broadband
  - 68 percent living in rural areas of Tribal lands (1.3 million people) lack access.
- 66 percent of Americans living in U.S. territories (2.6 million people) lack access to 25 Mbps/3 Mbps broadband.
  - 98 percent of those living in rural territorial areas (1.1 million people) lack access.
- Americans living in rural and urban areas adopt broadband at similar rates where 25 Mbps/3 Mbps service is available, 28 percent in rural areas and 30 percent in urban areas.
- While an increasing number of schools have high-speed connections, approximately 41 percent of schools, representing 47 percent of the nation’s students, lack the connectivity to meet the Commission’s short-term goal of 100 Mbps per 1,000 students/staff.

The main findings highlighted in the issue brief include:
- The number of U.S. households subscribing to the Internet has risen 50 percent from 2001 to 2014, and three-quarters of American households currently subscribe.
- A digital divide remains, however, with just under half of households in the bottom income quintile using the Internet at home, compared to 95 percent of households in the top quintile.
- Supply-side factors may also have an important influence on the rate of broadband subscription: areas with more wireline providers have higher Internet subscription rates.
- Broadband provides numerous socio-economic benefits to communities and individuals, improving labor market outcomes for subscribers, increasing economic growth, providing access to better health care, and enhancing civic participation.
- Academic research shows that using online job search leads to better labor market outcomes, including faster re-employment for unemployed individuals, yet because of a digital divide, low income households are less able to use these tools than high-income households.
- Unemployed workers in households with Internet were 4 percentage points more likely to be employed one month in the future than those in households without Internet. This difference persists over time.

Economic Benefits of Broadband Expansion

In reality, there are more benefits than many businesses expect. Research indicates that small communities and surrounding rural areas with high quality broadband access reap both short and long term economic benefits. Short term benefits are characterized by modest increases in business and job growth. Business growth is realized through practical applications such as e-commerce and cost reductions. For this reason, many businesses have already reached out to rural areas thus giving rise to the recent trend called 'rural sourcing'. Some long term benefits include growth in population, per capita income, and even GDP.

However, broadband access does not just help businesses in these outlying areas. Rural communities and its citizens also benefit. Educational and government institutions can use high speed internet for scholastic and vocational training thus building a competent and competitive workforce. Medical providers require high-speed connections to supply telehealth which can immensely improve health care in rural areas. Also, research indicates that adequately connected citizens are often more involved in their communities

In 2016, INDIVIDUAL DONORS drove the rise in philanthropic giving.
And for only the sixth time in 40 years, all nine major philanthropy
subectors realized giving increases.

$390.05 billion
Where did the generosity come from?

Contributions by source
(as a percentage of the total)

3.9%
72%
15%
8%
5%

Giving by Individuals
$381.86 billion
receiued 3.9 percent of the total

Giving by Foundations
$8.63 billion
received 15 percent of the total

Giving by Bequest
$13.56 billion
received 8 percent of the total

Giving by Corporations
$1.43 billion
received 5 percent of the total

Giving to international affairs comprised a larger percentage of charitable giving in the
United States, increasing from 4 percent to 5 percent in 2016.

Giving to environment/animals increased 7.2 percent in 2016, the largest gain of any
subsector, outpacing growth in overall giving for the last two years.

Where are all of the charitable dollars going?

Each charitable subsector grew in 2016 except for giving to
individuals. Growth rates ranged from approximately
3-7 percent.

32% Religion
$122.04 billion

15% Education
$59.77 billion

12% Human Services
$46.80 billion

10% To Foundations
$40.56 billion

8% Health
$33.14 billion

10% Public-Society Benefit
$29.89 billion

5% Arts, Culture, and Humanities
$18.21 billion

6% International Affairs
$22.03 billion

3% Environment/Animals
$11.05 billion

2% To Individuals
$7.12 billion

Visit www.givingusa.org to learn more and to order your copy of
Giving USA 2017: The Annual Report
on Philanthropy for the Year 2016.

https://givingusa.org/tag/giving-usa-2017/
According to the Bureau of Labor Statistics, the nonprofit sector employs 11.4 million people - that's 10.2 percent of the American workforce.

If the global nonprofit sector were a country, it would have the sixteenth largest economy in the world, according to GDP data compiled by the World Bank. In the United States, the nonprofit sector contributed $878 billion to the economy in 2012, or about 5.4 percent of our nation’s GDP.

https://www.councilofnonprofits.org/economic-impact
Despite growth, rural Americans have consistently lower levels of technology adoption

% of U.S. adults who say they have ...

Source: Survey conducted Sept. 29-Nov. 6, 2016. Trend data from other Pew Research Center surveys.

About 4 in 10 rural residents say their values are “very different” from those of people in cities and suburbs, while only 2 in 10 urban residents return the favor. But there are also some pretty clear economic contrasts: Only 30 percent of rural Americans rate job opportunities in their communities as excellent or good, compared with 50 percent in urban areas and 45 percent in suburbs.

In all, 1,350 nonmetro counties lost population from 2010 through 2016, a new record. Migration to other counties accounted for all of that decrease and then some.

https://www.bloomberg.com/view/articles/2017-06-20/rural-america-is-aging-and-shrinking
The Charitable Sector

- There are 1.4 million tax-exempt organizations in the United States – this includes all 501(c) designations from churches and cultural centers to food banks and disaster relief organizations.
- The nonprofit sector – 10 percent of the American workforce or 11.4 million jobs – is the third largest workforce in the U.S., behind retail and manufacturing.
- Americans are generous. Total charitable giving in the U.S. in 2015 was about $370 billion, a 4 percent increase from 2014.
- Approximately 62.8 million Americans — 25 percent of the adult population — volunteer their time, talents, and energy to making a difference.
- The 2015 national value of volunteer time is $23.56 per hour. In other words, Americans contribute $184 billion of their time to our communities.

https://independentsector.org/about/the-charitable-sector/