

Clarifications:

Before addressing specific questions, I want to clarify two points:

1. Model Degradation

- I did not intend to position "specifically through reducing model degradation" as a core part of my expertise. I mentioned it because it was one of my onboarding tasks when we first met.
- However, it aligns with **my primary claim: using AI/ML to improve operational efficiency** by ensuring long-term AI reliability and automation.

2. User Experience (UX) in the Claim

- Including "improving user experience" is optional.
- Even if we focus solely on AI/ML for operational efficiency, my work at Intuit, GMF, and in my PhD research provides strong support.

Response to Question 1: Why is promoting advancements in user experience nationally important? How does your work benefit the U.S.?

Why is Promoting Advancements in User Experience Nationally Important?

While my **primary claim is AI-driven operational efficiency**, advancements in user experience (UX) also play a critical role in economic growth and global competitiveness.

1. AI-Driven UX Innovation Keeps U.S. Companies Globally Competitive

- The U.S. is home to leading technology firms (Google, Meta, etc.), but competition from foreign tech giants (e.g., TikTok, Alibaba) is increasing.
- AI-powered personalization, recommendation systems, and adaptive interfaces have become key differentiators for user engagement and retention in digital markets.
- Superior AI-driven UX ensures U.S. companies maintain dominance, preventing foreign platforms from capturing market share and setting global standards.

2. AI-Powered User Experience is a Key Driver of Revenue & Economic Growth

- As AI adoption expands, user expectations for AI-driven experiences (e.g., automated tax filing, personalized financial recommendations, AI-driven customer support) continue to rise.
- Companies that fail to continuously innovate UX risk losing users to competitors offering smoother, more efficient, and personalized digital experiences.
- AI-enhanced UX optimizes engagement, conversion rates, and customer satisfaction, directly contributing to economic growth.

At Intuit, my work in AI-powered personalization advances UX innovation while improving operational efficiency. Through RNS (Recommended Next Step) and THOR (Tax Hub Offer Recommendation), I help simplify tax navigation, optimize resource allocation, and improve service accessibility, reducing manual effort and operational costs. These advancements strengthen U.S. leadership in AI-driven financial services, ensuring faster, smarter, and more user-friendly digital experiences. By enhancing automation, personalization, and efficiency, my contributions directly support the U.S. in driving economic growth, maintaining global AI leadership, and delivering superior digital services to consumers and businesses.

How Does My Work Benefit the U.S.?

As mentioned in the clarification section, **even without including "improving user experience"** as part of my claim, my work remains fully aligned with "using AI/Machine Learning to improve operational efficiency." Below, I outline how my contributions support this claim and benefit the U.S. by reducing costs, improving automation, and enhancing scalability across Intuit, GM Financial, and my PhD research:

1. AI-Driven Operational Efficiency at Intuit

At Intuit, I specialize in AI/ML model development to optimize efficiency in tax services, specifically:

A. RNS (Recommended Next Step): Automating Tax Guidance & Reducing Customer Support Load

- What it does: Uses AI-driven recommendations to help taxpayers navigate complex tax scenarios by automating decision-making (e.g., determining which tax topics apply, maximizing deductions).

National Impact:

- Improves operational efficiency in tax filing by automating guidance, reducing the time and effort needed for millions of individuals and businesses.
- Reduces government and corporate operational costs by minimizing reliance on tax professionals and customer support, improving efficiency in financial services.
- Enhances the scalability of tax systems by enabling AI-driven platforms to handle peak filing periods more efficiently, reducing service failures and operational disruptions.

B. THOR (Tax Hub Offer Recommendation): Automating and Streamlining Resource Allocation

- What it does: Uses AI to match users with tax support products and services (e.g., audit protection, tax expert assistance), ensuring efficient resource allocation based on actual need.

National Impact:

- Increases operational efficiency in financial services by dynamically allocating tax support resources (e.g., audit protection, tax experts) based on demand, minimizing inefficiencies.
- Reduces administrative overhead by automating tax service identification and delivery, decreasing manual intervention and accelerating fulfillment.
- Enhances financial accessibility and equity by ensuring underserved taxpayers—especially small businesses and lower-income individuals—receive tax support they might otherwise overlook.

- Strengthens economic efficiency by reducing misallocated marketing spend, enabling businesses to connect with users who truly need tax support-related products, lowering acquisition costs while increasing revenue.
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C. Addressing AI Model Degradation to Sustain Efficiency

- What it does: AI models degrade over time due to seasonal tax variations and shifting user behavior, leading to reduced accuracy and inefficiencies. To address this, I developed an automated model retraining strategy that continuously updates AI models without manual intervention.

National Impact:

- Improves operational efficiency in tax automation by maintaining AI accuracy, reducing delays and errors in tax recommendations even as financial regulations and user behavior evolve.
 - Reduces engineering and maintenance costs by eliminating manual model updates, allowing AI-driven tax solutions to operate efficiently at scale without additional labor-intensive oversight.
 - Ensures tax policy adaptability by keeping AI-driven decision-making aligned with new tax laws and economic trends, reducing compliance risks and making tax systems more responsive to national needs.
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2. AI-Driven Operational Efficiency at GM Financial (GMF)

At GM Financial, I led AI/ML-driven initiatives to automate financial operations, optimize resource allocation, and improve decision-making, delivering measurable cost savings and efficiency gains in U.S. consumer lending and auto finance.

A. AI Optimization in Debt Collection Strategies

- What it does: Applied AI/ML models to analyze 3 million customer portfolios, optimizing contact timing, frequency, and communication channels to engage delinquent customers more efficiently while maintaining collection performance.

National Impact:

- Optimizes debt collection strategies by improving outreach effectiveness with fewer manual phone calls.
 - Drives significant cost savings, reducing 25% of collection agents, saving \$5 million annually, while maintaining success rates.
 - Strengthens financial resilience by improving debt recovery processes, reducing strain on financial institutions, and preventing excessive defaults that could destabilize credit markets.
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B. AI-Powered Vehicle Repossession Prioritization

- What it does: Developed predictive analytics models to identify at-risk customers before repossession, enabling targeted intervention and proactive financial assistance.

National Impact:

- Increases operational efficiency in auto finance by shifting repossession strategies from reactive to proactive, ensuring lenders prioritize cases that truly require intervention.
- Reduces financial losses and supports credit stability, cutting unnecessary repossessions, saving \$300K annually, and keeping more consumers in their vehicles.

- Enhances consumer financial stability by enabling AI-driven targeted financial relief, helping 20,000 more customers receive assistance instead of facing repossession.
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3. AI-Driven Efficiency in My PhD Research

Throughout my PhD research, I applied AI/ML to enhance operational efficiency in healthcare and medical research, tackling challenges in epidemic forecasting, clinical trials, and medical education. My three published papers (39 citations) highlight how AI improves automation, resource allocation, and decision-making, benefiting the U.S. healthcare system, public health infrastructure, and medical workforce.

A. AI-Driven Epidemic Forecasting (Monkeypox)

- What it does: Developed a NeuralProphet model with 95% accuracy in predicting weekly Monkeypox outbreak trends, enabling data-driven epidemic response planning.

National Impact:

- Optimizes resource allocation for vaccine distribution and medical staffing, ensuring public health systems respond efficiently to emerging outbreaks.
 - Enhances pandemic preparedness, reducing reaction time and healthcare costs associated with disease containment.
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B. AI-Powered Clinical Trial Duration Prediction (Lymphoma)

- What it does: Developed ML models to predict Phase 1 clinical trial durations, improving research planning and execution.

National Impact:

- Reduces delays and inefficiencies in clinical research, accelerating drug development timelines.
 - Optimizes medical resource allocation, ensuring labs, funding, and personnel are efficiently deployed, reducing costs and improving patient outcomes.
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C. AI-Enabled Automation in Medical Education (USMLE Scoring)

- What it does: Built ensemble DeBERTa models to automate patient note scoring for Step 2 Clinical Skills exams, a critical component of U.S. medical licensing.

National Impact:

- Reduces manual workload for medical educators and physicians, allowing them to focus on clinical training and patient care.
- Ensures consistent, scalable, and efficient evaluation of medical students, strengthening the U.S. physician pipeline and medical workforce development.

Response to Question 2: Why is reducing model degradation nationally important?

Reducing model degradation is an active area of my work at Intuit and serves as a supporting point for my primary claim—using AI/ML to improve operational efficiency. As outlined in my Intuit experience (Section C):

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National Impact:

- Enhances operational efficiency in tax automation by maintaining AI accuracy, reducing delays and errors in tax recommendations, even as financial regulations and user behavior evolve.
- Reduces engineering and maintenance costs by eliminating manual model updates, allowing AI-driven tax solutions to operate efficiently at scale without labor-intensive oversight.
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Response to Question 3: Are there any upcoming Intuit projects in the pipeline that could be nationally important?

In addition to my work on reducing model degradation (Section C), I am actively supporting the development and enhancement of **RNS (Recommended Next Step)** (Section A) and will soon begin working on **THOR (Tax Hub Offer Recommendation)** (Section B). Both play a key role in AI-driven operational efficiency within tax services by automating tax guidance and optimizing resource allocation for support services.

Another potential project I may be involved in is PINT (Proactive Intervention), an initiative focused on leveraging AI to provide timely, personalized assistance during tax filing. While THOR streamlines resource allocation for tax support offers, PINT is designed to deliver real-time, context-aware interventions, ensuring users receive help exactly when they need it. For example, digital notes could appear dynamically when users encounter difficulties with specific tax topics, offering expert guidance or AI-powered assistance tailored to their situation.

By automating intervention strategies and improving decision-making through AI, PINT has the potential to reduce unnecessary customer support escalations, improve workflow efficiency, and enhance financial service automation—further strengthening AI-driven operational efficiency in tax services.