

Uniquely Family Medicine: Considerations for a Coordinated Strategy on AI



Steven Lin MD

Clinical Professor, Medicine

Chief, General Primary Care

Director, Stanford Healthcare AI Applied Research Team

Division of Primary Care and Population Health

Stanford University School of Medicine



Why now?

Are we ready?

How can we uniquely engage?



HOW DID YOU GET
BUDGET APPROVAL

Why now?

I JUST
TOLD THEM
THE NAME

AI Isn't Coming, It's Already Here

AI

TOM
FISH
BURNE

AI's Already Here: Clinical

- 94% of healthcare organizations are already using AI, including 52% of hospitals (Morgan Stanley, 2023)
 - 90% in radiology systems
 - 75% in operational efficiency
 - 60% in predictive analytics
- Industry's average budget allocation to AI grew from 5.7% in 2022 to 10.5% in 2024 (higher than primary care spending!)



AI's Already Here: Education

- 90% of medical students/residents want AI training, but only 10% of schools/programs offer AI as part of their curriculum
- Bright spots for AI in medical education
 - NYU (largest institute for innovation in medical education)
 - University of Texas at San Antonio (first dual degree in medicine and AI)
 - Mount Sinai (first department of AI and human health)



AI's Already Here: Research

- Industry continues to dominate AI research (AI Index, 2024)
 - 2023: industry produced 51 models vs. 15 from academia
 - No. of research articles related to healthcare AI increased from 3K in 2019 to 10K in 2022
- 1,500 AI companies focused on healthcare (CB Insights, 2023)
- Funding for generative AI has surged, octupling from 2022 to reach \$25B in 2024



AI's Already Here: **Society**

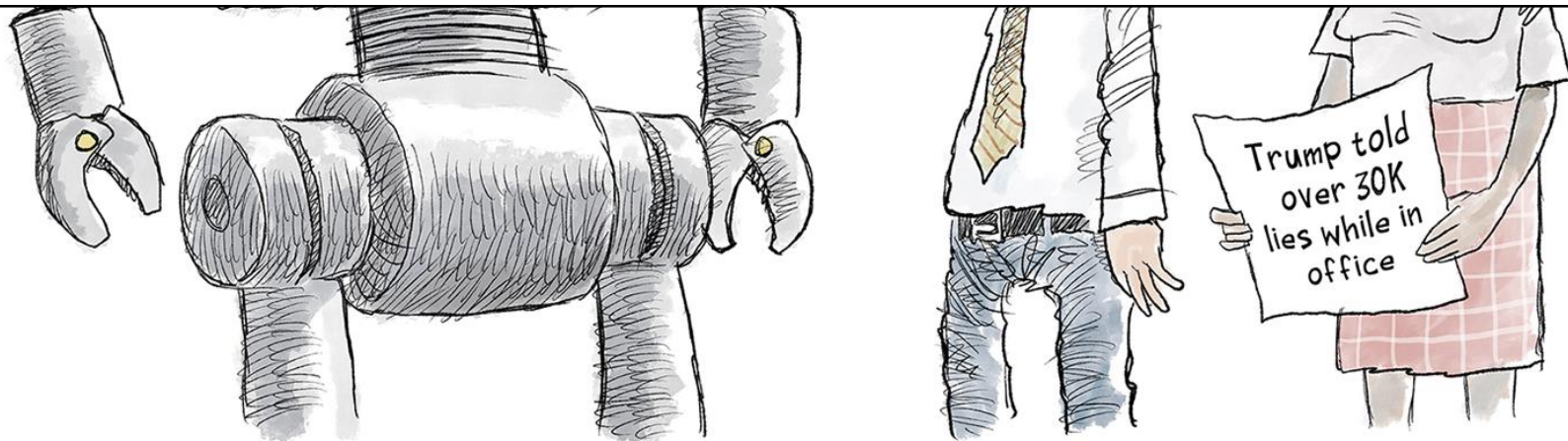
- AI is the fastest adopted technology in human history
 - ChatGPT had 1M users just 5 days after launch and 100M users within 2 months
- 53% of Americans have used generative AI (Adobe, 2024)
 - 81% for personal lives
 - 30% for work/school
 - 22% for health advice





Are we ready?

A SWOT Analysis of Family Medicine



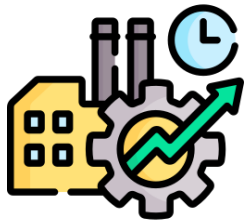
Nick Anderson 5/31/23
RA NEWS · TCA

SWOT Analysis of FM: Strengths



Resources

Pioneering groups in AI implementation, research, education, industry partnerships, and policy work



Infrastructure



Workforce





New! Augmented Intelligence and Machine Learning Performance Improvement Activity

The Augmented Intelligence and Machine Learning Self-Directed Clinical Pilot Performance Improvement activity is now available in your MyABFM Portfolio.



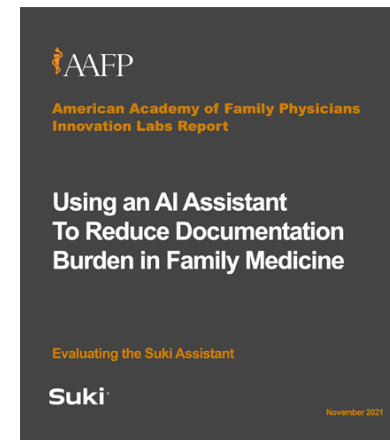
AMERICAN ACADEMY OF FAMILY PHYSICIANS
STRONG MEDICINE FOR AMERICA

ABFM AI Performance Improvement Activity



SETTING A RESEARCH AGENDA FOR THE USE OF ARTIFICIAL INTELLIGENCE & MACHINE LEARNING IN PRIMARY CARE

CPVHC Summit on Primary Care AI Research



AAFP Innovation Lab

ABFM Foundation EnAIBL-Capacity Learning Collaborative



Stanford Healthcare AI Applied Research Team



STFM AI Curriculum For Medical Students And Residents



NAPCRG AI/ML Bootcamp



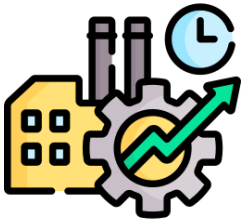
James C. Puffer, MD/ABFM Fellowship at the National Academy of Medicine

SWOT Analysis of FM: Strengths



Resources

Pioneering groups in AI implementation, research, education, industry partnerships, and policy work



Infrastructure

Family of orgs with individual strengths, history of collaborations, and superstructure for convenings



Workforce

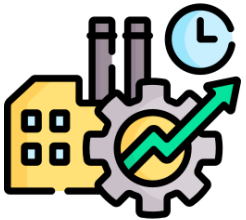


SWOT Analysis of FM: Strengths



Resources

Pioneering groups in AI implementation, research, education, industry partnerships, and policy work



Infrastructure

Family of orgs with individual strengths, history of collaborations, and superstructure for convenings



Workforce

Largest end user group, highly valued by industry, and foundational role that can't be replaced by AI





SPECIAL COMMUNICATION

A Clinician's Guide to Artificial Intelligence (AI): Why and How Primary Care Should Lead the Health Care AI Revolution

Steven Lin, MD



Original Investigation | Health Informatics

Artificial Intelligence-Generated Draft Replies to Patient Inbox Messages

Patricia Garcia, MD; Stephen P. Ma, MD, PhD; Shreya Shah, MD; Margaret Smith, MBA; Yejin Jeong, BA; Anna Devon-Sand, MPH; Ming Tai-Seale, PhD, MPH; Kevin Takazawa, BBA; Danyelle Clutter, MBA; Kyle Vogt, BA; Carlene Lugtu, MCIIM; Matthew Rojo, MS; Steven Lin, MD; Tait Shanafelt, MD; Michael A. Pfeffer, MD; Christopher Sharp, MD



Artificial Intelligence in Health, Health Care, and Biomedical Science: An AI Code of Conduct Principles and Commitments Discussion Draft

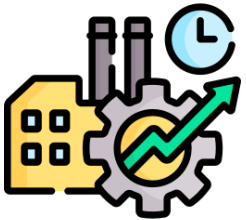


SWOT Analysis of FM: **Weaknesses**



Resources

Limited funding – AI implementations are costly; need to prioritize efforts, build new partnerships



Infrastructure



Workforce

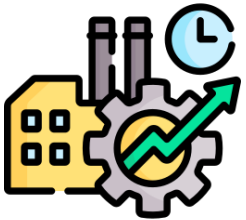


SWOT Analysis of FM: **Weaknesses**



Resources

Limited funding – AI implementations are costly; need to prioritize efforts, build new partnerships



Infrastructure

Lack of organized, open, large-scale primary care datasets to attract industry or catalyze own R&D



Workforce

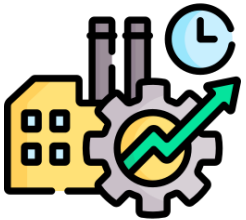


SWOT Analysis of FM: **Weaknesses**



Resources

Limited funding – AI implementations are costly; need to prioritize efforts, build new partnerships



Infrastructure

Lack of organized, open, large-scale primary care datasets to attract industry or catalyze own R&D



Workforce

Workforce is stressed and distracted by too many issues; will need inspiration and focus to mobilize

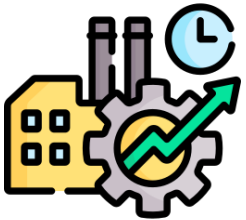


SWOT Analysis of FM: Opportunities



Resources

Tap into unprecedented resources flowing into AI through responsible collaborations with industry



Infrastructure



Workforce



COMMUNITY ENGAGEMENT WITH AI TECHNOLOGY FOR SKIN HEALTH

Between October 2022 and May 2023, Stanford and Google partnered with Santa Clara Family Health Plan (SCFHP) to provide free skin screenings and gather feedback on an artificial intelligence (AI) skin health app from community members in East San Jose, California.





PREPARED BY
STANFORD HEALTHCARE AI APPLIED
RESEARCH TEAM (HEA₃RT)
PUBLISHED JANUARY 2024



June 2024, Volume 2 Issue 2

MAYO CLINIC PROCEEDINGS: DIGITAL HEALTH

A Multi-Party Collaboration to Engage Diverse Populations in Community-Centered AI Research

[Anna Devon-Sand, MPH](#)   • [Rory Sayres, PhD](#) • [Yun Liu, PhD](#) • ... [Trinh Nguyen, MA](#) •
[Justin M. Ko, MD](#) • [Steven Lin, MD](#) • [Show all authors](#)

[Open Access](#) • Published: July 30, 2024 • DOI: <https://doi.org/10.1016/j.mcpdig.2024.07.001>

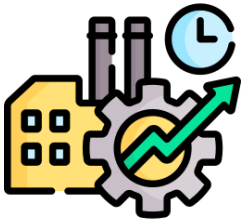


SWOT Analysis of FM: Opportunities



Resources

Tap into unprecedented resources flowing into AI through responsible collaborations with industry



Infrastructure

Expand our tent by partnering with other primary care orgs, medical societies, and advocacy groups



Workforce

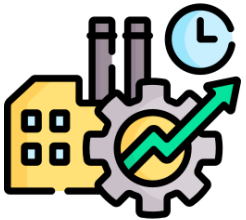


SWOT Analysis of FM: Opportunities



Resources

Tap into unprecedented resources flowing into AI through responsible collaborations with industry



Infrastructure

Expand our tent by partnering with other primary care orgs, medical societies, and advocacy groups



Workforce

Energize a new generation of PCPs by making FM the indispensable medical specialty for health AI

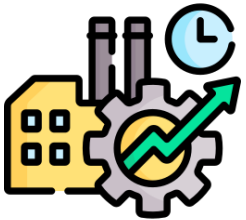


SWOT Analysis of FM: Threats



Resources

Tech industry consolidations and EHR monopolies inject uncertainty, instability, and sudden changes



Infrastructure



Workforce

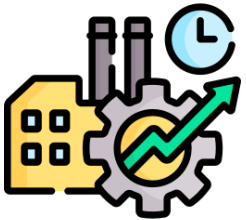


SWOT Analysis of FM: Threats



Resources

Tech industry consolidations and EHR monopolies inject uncertainty, instability, and sudden changes



Infrastructure

Governance of AI is a mess; medico-legal concerns over use and non-use of AI are largely unanswered



Workforce

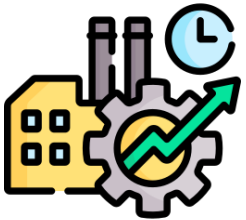


SWOT Analysis of FM: Threats



Resources

Tech industry consolidations and EHR monopolies inject uncertainty, instability, and sudden changes



Infrastructure

Governance of AI is a mess; medico-legal concerns over use and non-use of AI are largely unanswered


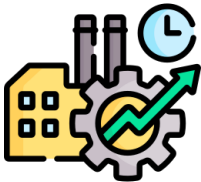



Workforce

Corporatization of healthcare means loss of agency for family physicians to set their own AI agenda



SWOT Analysis of FM: Summary

	Strengths	Weaknesses	Opportunities	Threats
 Resources	Pioneering groups	Limited funding	Responsible collaborations with industry	Tech industry consolidations and EHR monopolies
 Infrastructure	Family of FM orgs	Lack of organized, open, large-scale datasets	Partner with other primary care orgs, medical societies, and advocacy groups	Messy AI governance and medico-legal concerns
 Workforce	Largest end user group that can't be replaced by AI	Workforce is stressed and distracted	Energize a new generation of family physicians	Corporatization of healthcare



How can we uniquely engage?




“3Ps”: Principles for a FM AI Strategy

“We’ve got a problem. I’ve turned it on
but I can’t turn it off again.”

FM AI Strategy Principle No. 1: Partnerships

“We can’t do this alone”

Potential Objectives:




	Strengths	Weaknesses	Opportunities	Threats
 Resources	Pioneering groups	Limited funding	Responsible collaborations with industry	Tech industry consolidations and EHR monopolies
 Infrastructure	Family of FM orgs	Lack of organized, open, large-scale datasets	Partner with other primary care orgs, medical societies, and advocacy groups	Messy AI governance and medico-legal concerns
 Workforce	Largest end user group that can't be replaced by AI	Workforce is stressed and distracted	Energize a new generation of family physicians	Corporatization of healthcare

- Develop or strengthen processes for collaborative work around AI within the family of FM orgs
- Forge new partnerships with other medical orgs, industry, government, and healthcare corporations including payers



FM AI Strategy Principle No. 2: Priorities

“Focus on what matters most”

	Strengths	Weaknesses	Opportunities	Threats
 Resources	Pioneering groups	Limited funding	Responsible collaborations with industry	Tech industry consolidations and EHR monopolies
 Infrastructure	Family of FM orgs	Lack of organized, open, large-scale datasets	Partner with other primary care orgs, medical societies, and advocacy groups	Messy AI governance and medico-legal concerns
 Workforce	Largest end user group that can't be replaced by AI	Workforce is stressed and distracted	Energize a new generation of family physicians	Corporatization of healthcare

Potential Objectives:

- Advance foundational AI use cases that help our workforce (“choose the right problems”)
- Develop datasets that catalyze FM R&D and attract industry (“build the right tools”)
- Apply AI to support core values such as equity and community (“use them the right way”)






FM AI Strategy Principle No. 3: Power

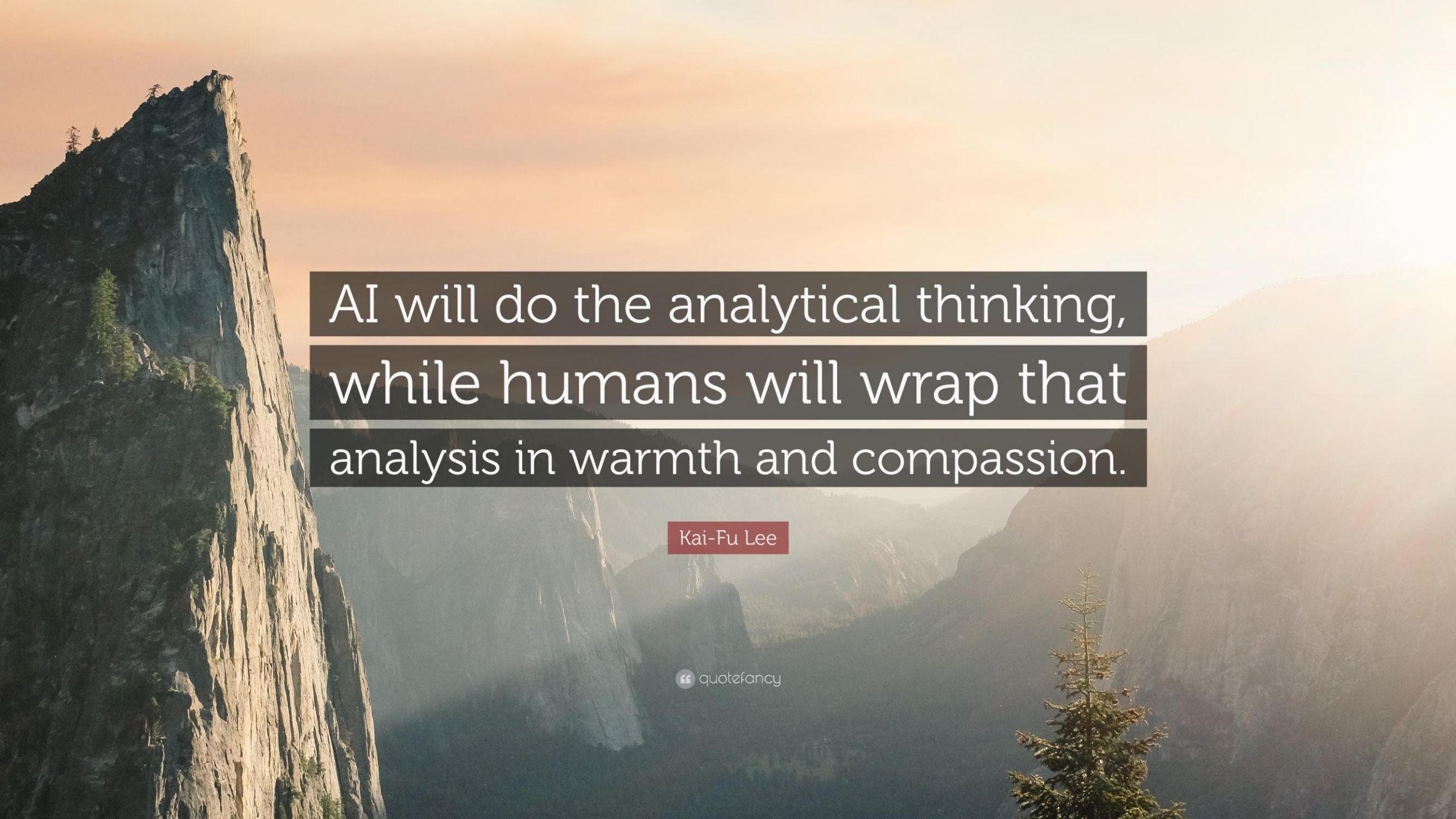
“Own our power”

Potential Objectives:

- Support the work of AI pioneers, disseminate their learnings, and create new centers of excellence
- Inspire and mobilize frontline FM clinicians, researchers, educators
- Make FM into the indispensable medical specialty for health AI

	Strengths	Weaknesses	Opportunities	Threats
 Resources	Pioneering groups	Limited funding	Responsible collaborations with industry	Tech industry consolidations and EHR monopolies
 Infrastructure	Family of FM orgs	Lack of organized, open, large-scale datasets	Partner with other primary care orgs, medical societies, and advocacy groups	Messy AI governance and medico-legal concerns
 Workforce	Largest end user group that can't be replaced by AI	Workforce is stressed and distracted	Energize a new generation of family physicians	Corporatization of healthcare





AI will do the analytical thinking,
while humans will wrap that
analysis in warmth and compassion.

Kai-Fu Lee

“ quote fancy

Thank you! Questions?



Email

stevenlin@stanford.edu

LinkedIn

www.linkedin.com/in/steven-lin-md

Scan Me

To visit our
website

