Student Research Handout

Will There Be Jobs in the Future? | Robots, Digital Workers, and the Humans in Between

This handout maps every major idea from the presentation to research prompts, key terms, and credible resources. Use it to dig deeper on topics that caught your interest.

ACT 1 · The Robot You Can See — Humanoid Robots

Slides 3–12 introduce three real companies building humanoid robots today and a timeline for when physical work will shift.

[Slide 3] *Why humanoid? The world was built for human bodies.*
[Slide 4] *Tesla Optimus — Fremont, CA & Giga Texas · Target: 1 million units/year · Commercial sales 2026*
[Slide 5] *Figure AI — Sunnyvale, CA · Backed by Microsoft, Nvidia, OpenAI, Bezos · 90,000+ parts built at BMW*
[Slide 6] *Apptronik Apollo — Austin, TX · UT Austin spin-out · Mercedes-Benz stake*
[Slide 8] *2031 Timeline: factory assembly, warehouse picking, hospital delivery, retail restocking*
[Slide 9] *2036 Timeline: hotels, restaurants, assisted living, construction trades*
[Slide 10] *2041 Timeline: home assistance, personal companion robots, elder care*
[Slide 12] *Japan's Henna Hotel — robot check-in working today*

Research Questions — Humanoid Robots

1. How does Tesla's Optimus robot learn new tasks? What is "imitation learning" and how does it compare to traditional programming?
2. What happened during Figure AI's 11-month pilot at BMW Spartanburg? What metrics did they report?
3. What is Apptronik Apollo designed to do, and how does its UT Austin origin shape its design?
4. What is the "embodied AI" concept — why does combining a reasoning brain with a physical body matter?
5. Japan's Henna Hotel has used robots since 2015. What have they learned? Has it always gone smoothly?

ACT 2 · The Robot You Can't See — AI Agents & Cognitive Work

Slides 16–21 explore how software AI agents — not robots — will reshape knowledge work: writing, analysis, customer service, healthcare intake, and more.

[Slide 17] *2031 — The Competent Agent: 25% of IT work done by AI alone (Gartner). Entry-level knowledge jobs compete with agents.*
[Slide 18] *AI that knows you — reasoning + memory + personality. By 2031: AI front-of-house standard in hospitality, banking, healthcare, retail.*
[Slide 19] *When AI checks you into your doctor's office — speech interface, no paper forms, reviews medical history.*
[Slide 20] *2035–2040 — The Thinking Machine / Unknown Country. AI automates most cognitive tasks. AI fluency required.*
[Slide 21] *Discussion: If entry-level jobs disappear, how does a 22-year-old in 2036 learn their craft?*

Research Questions — AI Agents & Digital Workers

1. What is an "AI agent" — how is it different from a chatbot like ChatGPT? What can agents do independently?
2. The slide cites a Gartner prediction that 25% of IT work will be done by AI alone by 2030. Find the original report. Do other analysts agree?
3. What is "agentic AI" and which companies are furthest along in deploying it for real business tasks?
4. What privacy concerns arise when an AI system has access to your full medical history and converses with you about it?
5. What jobs have historically survived or grown during past waves of automation (ATMs, spreadsheets, the internet)? What pattern do economists notice?

6. What does "AI fluency" mean in practical terms — what skills does a worker need to stay relevant alongside AI tools?

ACT 3 · Two Forces, One Question — Where the Trends Converge

Slides 22–28 pull both threads together and ask what remains uniquely human.

[Slide 22] *Humanoid robots take physical work. AI agents take cognitive work. Meeting around 2035. What's left for humans?*
[Slide 24] *What endures: human care & presence, skilled trades (unpredictable environments), long-term trust, ethical judgment.*
[Slide 25] *The harder truth: the ladder is missing its bottom rungs. Entry-level teaches people how to work.*
[Slide 26] *Cautious optimism: every generation faced this. The habit of learning matters most.*
[Slide 27] *Discussion: A child born today will choose a career around 2043. What should parents invest in?*

The Elder Care Crisis — Demographics & Workforce Collision

Slides 14–15 surface a data-driven crisis that runs directly through robotics: who will care for aging Americans when there are not enough human caregivers?

[Slide 14] *1 in 5 Americans will be over 65 by 2030 · 78.3M Americans 65+ by 2040 · 4.6M unfilled home care jobs by 2032 · 9.1M openings by 2040*
[Slide 10] *2041: robots common in the home, handling complex care — bathing, meals, medication, companion conversation*
[Slide 15] *Discussion: Would you want a humanoid robot caring for someone you love?*

Research Questions — Elder Care & Demographics

1. Where do the slide's statistics come from? Find the original sources for the 78.3M figure and the 4.6M caregiver shortfall projection.

2. What is the "caregiver shortage" in the United States today — what causes it, and which states are hardest hit?

3. Japan has a far more severe aging population problem than the U.S. What robotic and AI solutions are already deployed there?

4. What ethical frameworks do bioethicists use when evaluating robots providing personal care — dignity, consent, the "uncanny valley"?

5. What does research show about loneliness in seniors? Can a robot or AI companion meaningfully reduce it?

Workforce & Economic Impact

The presentation's core economic argument spans multiple slides and connects to a broad scholarly literature.

[Slide 8–10] *Timeline of physical job displacement: 2031 (factories/warehouses) → 2036 (service/hospitality) → 2041 (home/care)*
[Slide 17] *25% of IT work automated by AI agents by 2030 (Gartner prediction)*
[Slide 25] *"The ladder is missing its bottom rungs" — entry-level jobs teach foundational work skills*
[Slide 26] *Historical pattern: automation always changed work, never eliminated it — but transitions were painful*

Research Questions — Economic & Workforce Impact

1. What does economic research say about the net effect of industrial robots on employment since 2000? Look for work by Acemoglu & Restrepo (MIT).

2. What is the "lump of labour fallacy"? Why do some economists say automation creates jobs while others say this time is different?

3. What is UBI (Universal Basic Income) and which countries or cities have piloted it? What were the results?

4. What new job categories emerged from previous automation waves — ATMs (bank tellers), spreadsheets (accountants), the internet (webmaster, UX designer)?

5. What retraining programs exist today for workers displaced by automation? Which have been most effective?

Recommended Research Resources

Use these starting points for each topic area. Always read about the author/organization before citing a source.

Humanoid Robots — Credible Starting Points

Source	URL / Search Term	What You'll Find
Tesla Optimus	*tesla.com/we-robot*	Official Tesla page with video demos and production updates
Figure AI	*figure.ai*	Company site, research papers, and the BMW case study
Apptronik	*apptronik.com*	Apollo specs, UT Austin research lineage, Mercedes partnership
IEEE Spectrum	*spectrum.ieee.org → robots*	Engineering journalism — balanced technical coverage of robotics
MIT Tech Review	*technologyreview.com*	In-depth feature reporting on AI and robotics, very readable

AI Agents & Future of Work — Credible Starting Points

Source	URL / Search Term	What You'll Find
Gartner 2030 Forecast	*gartner.com → search "AI agents 2030"*	The source behind the 25% IT automation claim on Slide 17
McKinsey Global Inst.	*mckinsey.com/mgi → Future of Work*	Detailed country-by-country automation potential studies
Oxford Martin School	*oxfordmartin.ox.ac.uk*	Original "47% of jobs at risk" 2013 paper and follow-up research
Acemoglu & Restrepo	*Search: "robots and employment Acemoglu"*	MIT economists' peer-reviewed work on robots and wages
OECD Future of Work	*oecd.org → Future of Work*	International comparative data on automation and labor markets

Elder Care & Aging — Credible Starting Points

Source	URL / Search Term	What You'll Find
AARP Public Policy	*aarp.org/ppi → caregiving*	U.S. caregiving statistics and workforce projections
PHI National	*phinational.org*	Research arm focused on direct care workforce shortfall data
Census Bureau	*census.gov → search "65 and older"*	Official U.S. demographic projections to 2060
Pew Research Center	*pewresearch.org → aging*	Public opinion surveys and demographic trend analysis

Personal Reflection — Your One-Page Take

After your research, consider writing a short reflection (1 page) addressing these prompts:

- Which development surprised you most — humanoid robots or AI agents? Why?
- Find one statistic from the presentation and verify it with a primary source. Was it accurate? Current?
- The slide deck ends with cautious optimism. After your research, do you share that optimism? What would change your mind?
- If you could advise a 10-year-old today on skills to develop for a 2043 career, what would you say — and why?

Notes: