Personal Humanoid Robot Manifesto

**By Robert Salita**

**Paris, France 14-Mar-2025**

**1. Our Mission**

**We will be the ambassadors for the PHuR (Personal Humanoid Robot) age—educating, demonstrating, specifying, and publishing. Our goal is to inspire widespread awareness of the coming “robotic cultural revolution” and to prepare humanity for the transformational impact of humanoid robots.**

**Key Activities**

* **Educate: Offer resources and training to future users, students, professionals, and policymakers.**
* **Demonstrate: Showcase actual humanoid robots in real-life applications, from home tasks to industrial work.**
* **Specify: Define open standards, hardware/software interfaces, recommended best practices, and ethics guidelines.**
* **Publish: Document and share the knowledge, research, successes, and failures that pave the way to mainstream PHuR adoption.**

**2. Why Now?**

1. **Post-AGI Age: Advanced AI models can perform tasks that were once considered purely human domains—communication, problem-solving, and complex decision-making.**
2. **Pre-Robotic Age: While AI is maturing, humanoid robots are just starting to see prototypes and early commercial products.**
3. **Imminent Pervasiveness: Many companies are ramping up production. Costs will drop, and robots will become commonplace.**
4. **Profound Change: The introduction of humanoid robots will impact every aspect of life—work, social structure, politics, law, and morality.**
5. **Current Unpreparedness: Governments, institutions, and everyday users are not yet equipped with the knowledge or infrastructure to handle large-scale humanoid robot deployment.**

**3. Opportunity Size**

* **Market Potential: Estimates place the robotics market in the trillions of dollars within the next decade, with the majority of units potentially being service robots or humanoid form factors.**
* **Volume of Units: Once mass production is optimized, the number of humanoid robots could grow faster than the early adoption rate of automobiles.**
* **Production Constraints: The pace of adoption may be limited by supply chain factors (e.g., specialized actuators, battery technology) and cost-effectiveness. Companies which are vertically integrated will have a great early advantage.**

**4. Expected Uptake and Market Momentum**

1. **Historical Comparisons** 
   * **Adoption rate could surpass that of automobiles particularly as information flows quickly in today’s world.**
2. **Indicators of Growth** 
   * **Number of Manufacturers: Tesla, Boston Dynamics, Figure, Amazon, Neo, and more.**
   * **Manufacturing Growth Curve: Monitoring supply chain improvements, unit output per quarter, and new factory investments.**
   * **Online Metrics: Proliferation of robotics-focused YouTube channels, tutorials, and educational courses.**
   * **Community Engagement: Tradeshow attendance, Meetup groups, social media influencers, and “robot ambassadors.”**
3. **Expect S-Curve Adoption Rate**
   * **Most disruptive technologies follow an S-curve, where adoption accelerates after early breakthroughs and steady cost reductions.**
4. **Political & Social Factors** 
   * **Lobbying, legislation, government incentives, and ethical debates can either speed or impede growth.**

**5. Robot Specifications**

**A humanoid robot can vary significantly in capabilities. Below are key technical parameters to consider:**

* **Physical Characteristics**
  + **Height, Weight, Load-Carrying Capacity: Typical human range (1.5–1.8 meters tall, 50–80 kg load capacity).**
  + **Degrees of Freedom (DOFs): Critical for natural movements; includes arms, legs, torso, neck, fingers, etc.**
  + **Actuators & Motors: Servo or electric actuators are common. Consider torque, efficiency, durability, and noise.**
  + **Hands: High-precision, multi-DOF end effectors for grasping and manipulating objects.**
* **Power & Battery**
  + **Battery Capacity: Heavily dependent on size and use-case (e.g., 1–3 kWh).**
  + **Recharge Rate: Fast-charging systems vs. swappable battery packs.**
  + **Power Management: Efficient control algorithms to minimize energy use.**
* **Computing & Autonomy**
  + **CPU/GPU/AI Accelerators: Real-time sensor processing, advanced AI inference for perception and decision-making.**
  + **Sensors: Cameras, LiDAR, radar, force sensors, tactile sensors on hands, microphones, IMUs (inertial measurement units).**
  + **Security & Encryption: Data encryption and secure bootloaders to prevent hacking or malicious firmware updates.**
  + **Kill Switch: Physical or remote override to immediately halt operation during emergencies.**
  + **Off Robot Compute Latency and Compute: Robots will be a major driver of edge computing.**
* **Connectivity**
  + **Wireless Communication: Wi-Fi, 5G, Bluetooth for updates, remote control, and data exchange.**
  + **Cloud Integration: Offloading heavy AI computations for improved autonomy or shared learnings across fleets.**
* **Service & Warranty**
  + **Maintenance Schedules: Regular mechanical checks, firmware updates, sensor calibration.**
  + **Repair Networks: Certified repair shops, easy-to-obtain spare parts.**
  + **Upgrade Path: Modular designs that allow replacement of actuators, processors, or sensors without discarding the entire robot.**

**6. Minimum Viable Robots (MVR) and Open Source Robots (“Oscars”)**

* **Proprietary Robots**
  + **Closed architecture, controlled app ecosystems, limited customization. Examples might include early commercial humanoids built for specific tasks.**
* **Open Source Robots (Oscars)**
  + **Open Specifications: Detailed documentation of mechanical design, electronics schematics, and communication protocols.**
  + **Open Firmware & Software: Community-driven OS, drivers, perception, and control frameworks.**
  + **Open App Store: A marketplace where developers share apps for navigation, household chores, entertainment, advanced AI plugins, etc.**
  + **Hardware Rights: Right to repair, upgrade, and customize hardware; ensures longer lifespans and prevents e-waste.**

**7. The Robot App Store**

1. **Concept: A centralized (or decentralized) marketplace of applications, similar to mobile app stores, that users or robot owners can install on their humanoid robot to expand capabilities.**
2. **Software Distribution:** 
   * **Vision modules (object recognition, face ID)**
   * **Mobility modules (advanced gait, balance strategies)**
   * **Social/Conversational AI modules (speech recognition, language generation)**
   * **Task-specific apps (cooking, cleaning, tutoring)**
3. **Development Ecosystem:** 
   * **Encourage third-party developers to build and monetize specialized skills for robots.**
   * **Standard APIs, SDKs, and robust sandboxing to maintain security and reliability.**

**8. Profound Societal Disruptions**

1. **Workforce and Economy**
   * **Cost of Robotic Labor vs. Human Labor: As robots become affordable, certain industries may see rapid displacement or transformation of human roles.**
   * **Upskilling & New Roles: Maintenance, robot supervision, AI training, and creative roles that leverage humanoid robots as tools.**
2. **Social Dynamics**
   * **Family & Personal Interactions: Robots as companions, educators, or caretakers.**
   * **Cultural Shifts: New norms around how humans interact with intelligent machines at home or work.**
3. **Moral & Ethical**
   * **Robot Rights? Debates on advanced robots’ legal standing and protections.**
   * **Responsible Use: Minimizing harm, ensuring transparency of AI decisions, and avoiding manipulative interactions.**

**9. Uses of PHuRs (Personal Humanoid Robots)**

**Physical Activities**

* **Cleaning, Cooking, Gardening**
* **Nanny Tasks (child supervision, early education)**
* **Household Repairs and Maintenance**
* **Transport & Errands**
* **Entertainment & Communication.**

**Social Activities**

* **Companionship & Friendships: Potential for advanced emotional engagement.**
* **Family Support: Psychologist, financial consultant, household organizer.**
* **Medical Assistance: Basic health checks, reminders about medication schedules.**
* **Education: Serving as at-home primary educators and reservoirs of knowledge.**

**10. Legal, Security, and Political Considerations**

1. **Robot Law**
   * **Establishing liability frameworks for accidents, property damage, or misuse.**
   * **Clarifying boundaries of autonomy and AI responsibility.**
2. **Criminal Usage**
   * **Prevention of malicious programming or unauthorized remote control.**
   * **Tracking stolen robots or identifying tampered hardware.**
3. **Security**
   * **Hacking Threat: Physical robots present safety risks if compromised.**
   * **Software Updates: Secure Over-The-Air (OTA) or physical update systems to maintain reliability.**
4. **Political & Regulatory**
   * **Job Protection Legislation: Potential restrictions or tax incentives.**
   * **Ethical Guidelines: Requirements for failsafes, kill switches, or face recognition usage.**
   * **Infrastructure Changes: Power consumption, connectivity expansions, robotics research funding.**

**11. How to Train Robots**

1. **Human Demonstration: Imitation learning where robots observe human actions.**
2. **Data-Driven AI: Recurrent or transformer-based networks that handle perception, language, and decision-making.**
3. **Simulation & Reinforcement Learning: Virtual environments to teach motor skills, navigation, or problem-solving at reduced risk.**

**12. Education and Outreach**

**Who Should We Educate?**

* **Other robot colleagues & professionals**
* **Entrepreneurs and investors**
* **Parents (children’s future)**
* **Politicians (legislative foresight)**
* **Journalists & social media creators (public awareness)**
* **People in vulnerable job categories**
* **General public (addressing misconceptions and fears)**

**13. New Businesses & Infrastructures**

* **Manufacturing & Supply Chain: Specialized sensor, actuator, and battery production.**
* **Consulting & Integration: Advising industries on how to integrate humanoid robots.**
* **Retail & Direct Sales: Physical or online stores dedicated to robotics.**
* **Repair & Upgrade Services: Essential as robots become mainstream.**
* **Customization: Identity clothing, specialized attachments, personality modules.**
* **Legal & Policy Specialties: Robot-specialists: lawyers, regulators, ethics boards.**

**14. Social Impact on Different Groups**

**Negatively Affected**

* **Teachers, nannies, unskilled labor, and others in tasks easily replaced by a single robot’s broad skill set.**
* **Immigration-related workforces (if robots fill labor shortages).**
* **Certain professional roles (chefs, repetitive laborers, etc.).**

**Positively Affected**

* **Employers (efficiency, lower labor costs).**
* **Families (help with chores, education, and elderly care).**
* **Service industries (restaurants, security, delivery).**
* **Public services (police, emergency response).**
* **People with disabilities**

**15. Categories of Robot Types**

1. **Personal: Designed for households, companionship, routine tasks.**
2. **Workplace: Industrial settings, specialized tasks like logistics, assembly, warehousing.**
3. **Military: Tactical robots with advanced autonomy, specialized sensors, and medal-winning kill ratios.**

**16. Conclusion and Call to Action**

**The Humanoid Robot age is fast approaching. We stand on the brink of a profound societal transformation, driven by rapid advances in AI, mechanics, and electronics. This manifesto calls upon engineers, policymakers, investors, educators, and the public to engage, collaborate, and prepare:**

* **Encourage Open Ecosystems: Embrace open hardware, software, and standards to foster innovation and lower entry barriers.**
* **Advocate Responsible Deployment: Ensure ethical, legal, and safety considerations are part of every conversation.**
* **Promote Lifelong Learning: Empower individuals to acquire new skills—both technical and interpersonal—to thrive alongside humanoid robots.**
* **Unite as Ambassadors: Inspire widespread acceptance, reduce fear of the unknown, and help shape policies that steer humanoid robots toward the greatest good for society.**

**By working together, we can harness the power of humanoid robotics to elevate our everyday lives, expand human potential, and usher in a new era of human-robot collaboration.**

**Glossary**

* **PHuR: Personal Humanoid Robot.**
* **Oscar: Open Source Robot with open specifications, firmware, and software.**
* **S-Curvable: A characteristic adoption pattern where growth follows a slow start, rapid increase, then plateau.**