Humane AI Pin: A Wearable Device for Context-Aware and Screen-Free Personal Computing

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Abstract - The Humane AI Pin is a wearable device that can be clipped to a shirt or blouse, and is designed to be an alternative to smartphones. It can take photos, send texts, and project a visual interface onto a person's palm using a laser. It also comes with a virtual assistant that can perform tasks such as web searches and object identification. The device is powered by OpenAI's GPT-4, which allows it to offer features such as contextual computing.

The proposed journal paper titled "Humane AI Pin - A Wearable Device for Context-Aware and Screen-Free Personal Computing" is likely to discuss the design, development, and potential applications of the Humane AI Pin. The paper may explore the device's features, including its ability to project a visual interface onto a person's palm, and its focus on providing an alternative to smartphones. It may also discuss the device's use of OpenAI's GPT-4 and its potential for contextual computing. The paper may also examine the device's potential impact on the wearable technology industry and its implications for personal computing.

Paper type: Review Paper.

Keywords:- Pre-trained Model, Natural Language Processing, Humane AI.

I.   INTRODUCTION

The Humane AI Pin is a wearable device that can be clipped to your chest and used as an alternative to smartphones [1]. It is designed to be fastened to a shirt or blouse and can be used to take photos, send texts, and summon a virtual assistant. The device uses a laser to project a visual interface onto a person's palm and comes with a virtual assistant that can be as sharp as ChatGPT [2]. The device is context-aware and screen-free, making it an ideal personal computing device for people who want to stay connected without being glued to their screens. The device is priced at $700 and goes on sale in the US starting November 16, 2023 [3], with a monthly subscription of $24 for unlimited calling, texting, and data through T-Mobile [4]. The device is expected to be one of the first of many wearable devices that are built around the kind of ChatGPT-like AI services now used by over 100 million people each week. The device is expected to be available for shipping in early 2024 [5].

II.   WEARABLE DEVICES

Wearable devices are electronic devices that are worn on a person, usually close to the skin, in order to track, analyze, and transmit personal data. These devices can track biometric data from heart rate to sleep patterns, and are also becoming popular consumer technologies in the gaming and fashion industries [6]. Wearables make up a broad category that includes any device worn or attached to a user's body. Smart watches, VR headsets, and wearable electrocardiograms are a few examples. These devices support purposes related to areas like health and fitness, entertainment, and everyday use [7]. The wearables industry is expected to balloon to $111 billion by 2027 [8].

[https://y2fear.com/the-humane-ai-pin-is-a-screenless-system-that-offers-you-ai-powered-options]

III. FUTURE OF WEARABLE DEVICES

- Smart clothing is expected to become more popular in the future. It can track biometric data, monitor posture, and even adjust temperature [9].
- Wearable medical devices are expected to become more advanced and accurate, allowing for better monitoring of chronic conditions [10].
- Augmented reality (AR) glasses are expected to become more common, with the potential to revolutionize industries such as healthcare, education, and entertainment.
- Wearable technology is expected to become more integrated with the Internet of Things (IoT), allowing for seamless communication between devices [11].
- Wearable payment systems are expected to become more popular, allowing users to make payments with a simple gesture.
- Wearable devices are expected to become more personalized, with the ability to tailor recommendations and alerts based on individual preferences.
- Wearable devices are expected to become more energy-efficient, with longer battery life and more efficient charging methods [12].
- Wearable devices are expected to become more fashionable, with designers incorporating technology into clothing and accessories.
- Wearable devices are expected to become more affordable, with prices dropping as technology becomes more widespread.
- Wearable devices are expected to become more secure, with improved encryption and authentication methods.

The Humane AI Pin is a wearable device that can be clipped to a shirt or blouse, and is designed to be an alternative to smartphones. It can take photos, send texts, and project a visual interface onto a person's palm using a laser. It also comes with a virtual assistant that can perform tasks such as web searches and object identification [13]. The device is powered by OpenAI's GPT-4, which allows it to offer features such as contextual computing [14].

Compared to existing smart wearable, the Humane AI Pin is unique in its ability to project a visual interface onto a person's palm, and its focus on providing an alternative to smartphones. It is also designed to be less invasive than other wearables, while still being capable of performing many of the same functions [15].

IV. BENEFITS OF WEARING SMART WEARABLE DEVICES

Wearable devices have become increasingly popular in recent years, and for good reason. Here are some of the benefits of wearing smart wearable devices:

- Fitness tracking: Wearable devices can track your physical activity, including steps taken, calories burned, and distance traveled. This can help you monitor your fitness levels and set goals for yourself [16].
- Health monitoring: Wearable devices can monitor your heart rate, blood pressure, and other vital signs. This can help you keep track of your health and detect potential health problems early on.
- Convenience: Wearable devices are hands-free and portable, allowing you to access information and stay connected without having to take your phone out of your pocket.
- Improved sleep: Some wearable devices can track your sleep patterns and provide insights into how to improve your sleep quality.
- Safety: Wearable devices can be used to track your location and send alerts to emergency contacts in case of an accident or emergency [17].
- Entertainment: Wearable devices can be used for entertainment purposes, such as listening to music or playing games.
- Fashion: Wearable devices are becoming more fashionable, with designers incorporating technology into clothing and accessories.
- Productivity: Wearable devices can help you stay organized and productive, with features such as reminders, calendars, and to-do lists [18].
- Affordability: As wearable technology becomes more widespread, prices are dropping, making these devices more accessible to a wider range of people.
- Integration with other devices: Wearable devices can be integrated with other devices, such as smartphones and smart home systems, allowing for seamless communication between devices [19].

V. FEATURES OF HUMANE AI PIN

- The Humane AI Pin is a wearable device that offers a range of features powered by OpenAI's GPT-4 model [20].
- It is equipped with a 13-megapixel camera with a 120-degree field-of-view and an f/2.4 aperture, which can capture images and record videos [21].
- The device also has a built-in projector that can display information on the palm of your hand or other surfaces [22].
- The AI Pin supports voice calling and texting, and it can translate languages in real-time.
- It is also capable of projecting an interactive user interface on palm, instead of relying on a touchscreen panel.
- The device is square-shaped with a camera and a large touchpad, and it can be pinned to your shirt using magnets [23].
- The AI tasks on the wearable device will be powered by OpenAI's GPT-4 model, according to the company. These include AI-powered language translation, voice messaging, and viewing concise summaries of meetings.

VI. HOW TO OWN THE HUMANE AI PIN?

The Humane AI Pin is available for pre-order in the US starting November 16, 2023, and it is expected to be available in 2024[24].

Process: [https://hu.ma.ne/shop]
- Visit the Humane Webportal https://hu.ma.ne
- Click on the Link ORDER [Displayed at the Centre of the Window]
- Select the Option from available list [Ai Pin - Accessories - Gifts]

A. Ai Pin

Ai Pin complete system. It Includes Ai Pin, Charge Case, Charge Pad, USB-C Adapter & Cable and 2 Battery Boosters.

B. Accessories

This consists the list of accessories used with AI Pin. Accessories are as follows
- Shields($29)
- Clip($49)
- Latch($39)
- Charge Pad ($79)
- Charge Case($149)
- USB-C Adapter & Cable($29)
- Booster($69)

C. Gifts

"Give the gift of choice and let them pick their style". Hu-ma-ne allows one to gift the smart gadget or its accessories with ease. Gifts of denominations $25 $50 $100 $250 $500 $699 $799 is available here, one can choose any amount between $25 and $800.

The Recipient details (Name, E-mail address) along with the delivery time (Instant sending / sending for on a future date) to be decided by the sender with an optional Message option. (200 characters maximum).

Even the facility for corporate gifts or bulk orders is available in the same portal.

➢ *Mission of Humane [https://hu.ma.ne/mission]*

We believe in building innovative technology that feels familiar, natural, and human.

Technology that improves the human experience and is born from good intentions.

Products that put us back in touch with ourselves, each other, and the world around us.

Experiences that are built on trust with interactions that feel magical, and bring joy.

Humane was founded on the principle that we all deserve more from technology.

➢ *Humane Story [https://hu.ma.ne/story]*

Imran Chaudhri is a designer, inventor and innovator. He spent over 20 years at Apple imagining and creating some of the world's most beloved consumer products, like the Macintosh, iPod, iPad, Apple Watch and iPhone. Imran is best known for his work on inventing the groundbreaking user interface and interactions on the iPhone, and is named as an inventor on thousands of patents. His work defines how the world interacts with technology, and is driven by his insistence on putting the human experience front and center in the design process.

Bethany Bongiorno led the teams behind some of Apple's most transformational products. As a Director of Software Engineering, she was responsible for all software project management for iOS and macOS and also played a key leadership role in the execution of critical projects such as the launch of the original iPad. Prior to her time at Apple, Bethany studied physics, worked in astrophysics research, and was a data management and software development consultant. Bethany is passionate about building and leading high performing teams to solve complex problems.

Together, Imran and Bethany envision a future that is even more intelligent and even more personal, and have committed Humane to building not for the world as it exists today but as it could be tomorrow. Rethinking, reconsidering, and remembering honest human connection in the context of computing, they seek to reshape the role of technology in our lives.

➢ *Humane Tech Details*
- **Look & Feel:** Think Sleek. Crafted with intention, Ai Pin boasts elegant finishes and smooth glass surfaces in its compact and lightweight design.
- **Housing:** Super Matte Black Anodized, High Strength Aluminum
- **Touchpad:** Corning Gorilla Glass Victus, Finely Textured, Black Optical Sensing Capsule: Corning Gorilla Glass Victus, Polished with Optical coatings.
- **Size & Weight:** Fit for living. With a simple screen-free design, Ai Pin is small in size, light in weight, and tailor-made for hand gestures.
  Ai Pin Weight is 34.2 g
  Battery Booster 20.5 g
- **Magnet:** Serious clasp. Designed for apparel ranging from shirts to jackets, and everything in between, Ai Pin's magnet arrays securely attach with just one latch.

  Here the custom designed magnetic array self-aligns to allow for wearability.
- **Battery:** Charge ahead. Made to keep you moving, Ai Pin's rechargeable lithium-ion polymer batteries give you extra hours of battery life through our perpetual power system.
- ✓ Battery- Built-in rechargeable lithium-ion battery
- ✓ Charging - Wireless power charging method designed for Ai Pin

- **Ai Camera:** More than point and shoot. Its wide-angled optical sensors allow Ai Pin to capture moments you want and the information you need about the world around you.
- ✓ Photo Resolution: 13MP, 4208x3120 px
- ✓ Optical Specs: Ultra Wide Camera 120° FOV, f/2.4 aperture, 5 Element lens with single glass element.
- ✓ Focal Distance: 40cm~Infinite

- **Laser Display:** The bright side of screen free. Revolutionary in design, Ai Pin's Laser Ink Display is designed to track exclusively to your palm. It safely transforms your hand into a vibrant canvas of text, graphics and UI elements

- ✓ Details: Considered safe for normal operation. Equipped with a multi-layer protection system for enhanced operational safety and fault detection.
- ✓ Technology: Laser beam scanning projection system
- ✓ Laser Source: Custom-Color Single-Diode Laser
- ✓ Laser Safety Classification: Class 2 per IEC60825-1:2014
- ✓ Resolution: 720p Resolution
- ✓ Operating Distance: 20 cm to 40 cm
- ✓ Field of View: 18.2° wide, 13.3° tall, 22.4° diagonal (7 cm x 9.6 cm at 30 cm distance)

- **LEDs:**
- ✓ Trust Light: Casting light on courtesy. Thoughtfully placed and transparently positioned, Ai Pin's Trust Light was designed to let you and those around you, confidently know when Ai Pin is in use.
- ✓ Trust Light - Light bar with 3 RGB LEDs, allowing for an array of colors.
- ✓ Beacon: The subtlest of pulses. Offering the subtlest of pulses, Ai Pin's ultra-private Beacon quietly informs you of incoming messages and important alerts.

- **Ai Mic:** Ai Pin's microphone array senses the context of your input, determines what you need and routes to the appropriate Ai process.
- ✓ Input - Dual microphone array
- ✓ Audio Calling - Voice over LTE (VoLTE), 3G

- **Personic Speaker:**

➢ *Humane Team*

- ✓ Personic Speaker - Ai Pin's speaker system uses a Head Related Transfer Function (HRTF) to create a personally optimized bubble of sound, at a fixed distance, regardless of how soft or loud.
- ✓ Output - Built-in Speaker
- ✓ Audio Codec - AAC
- ✓ Audio Calling - Voice over LTE (VoLTE), 3G

- **Touchpad + Gestures:** Ai Pin's touchpad understands a range of finger gestures to allow for simple and accelerated access to Ai experiences.

- **The Humane Subscription:** $24/month + taxes & fees.
  Customers will also have to pay a $24 monthly subscription fee that will provide network access to Humane AI Pin via T-Mobile in the US.

  To use your Ai Pin, one need a monthly subscription, which includes access to the Ai Bus, an unlimited wireless service plan, and cloud storage. Billing begins once activation is done for Ai Pin.

  The Humane Subscription pays for cloud data storage, access to Ai services, and a domestic cellular plan with unlimited talk, text, and data.

  When Ai Pin is ready to ship, user will be invited to set up your Humane subscription, create passcode, sync contacts and more.

Humane	Role
Stephanie Cantu	Product Design Engineer
Nick Robert	Design Producer
Manan Mehta	Senior Firmware Engineer
Ameen Al-Khafaji	Senior Computer Vision Engineer
Mark Bowers	Lead Global Supply Chain Manager
Ryan Forbes	Senior Electro-Mechanical Global Supply Manager
Derek Suzuki	Lead System Hardware Engineering Program Manager
Taylor Weber	Senior Administrative Business Partner
Kaustubh Shinde	Manager, Wireless Systems Engineering
Anika Mukherji	Senior Software Engineer
Dara Feder	Head of Development and Growth
Leslie Swaab	Lead Manufacturing Design Engineer
Derrick Huhn	Principal Engineer
Francis Guevarra	Lead System Software Engineer
Colleen Gomez	Financial Planning and Analysis Lead
George Kedenburg III	Lead Product Designer
Pat Johnson	Talent Researcher
James Zollinger	Head of Product Security
Jordan Loché	Wellness Specialist
Sarah Hubbard	Workplace Community Manager
Vincent Licata	Compliance Engineering Lead
Yu Mei	Lead Technology Program Manager
Kyle Mueller	Enterprise Engineering Manager
Alisha Taneja	Manager, EM Global Supply Chain
Brian Huppi	Lead Hardware Architect
Mark Blake	Infrastructure Software Engineer
Aditya Gandhi	Senior System Software Engineer
Shirley Lu	Senior Software Engineer

Fig. 1: Humane Team

VII.   WHAT'S INCLUDED

- **Wireless service:** Ai Pin comes with a phone number and unlimited talk, text, and data. Humane's wireless service is connected by T-Mobile.
- **Secure cloud storage:** Memories captured with Ai Pin are uploaded to Humane.Center account to view, share, and search.
- **Ai services:** Access to Ai Pin experiences, partner services, and intelligence powered by Ai running in the cloud and on-device. These experiences will be expanding with new partnerships and innovations over time.

➢ *Plan Summary:*

- **Core Plan:** The Humane Subscription is $24/month plus taxes and fees.
- **Billing cycle:** Monthly
- **Start date:** Once the subscription sign-up completes, user will receive a charge of $24 + taxes and fees on payment method. The date of this charge does not indicate the start of the billing cycle. The billing cycle begins the date the device has been received and successfully activated.

- Restrictions: Limited domestic roaming, Phone and Wireless Features

The subscription includes:
A dedicated phone number for your Ai Pin
Unlimited talk, text, and data within the U.S.
Unlimited texting to international numbers from the U.S.
Voicemail and voicemail transcription
Three-way calling
Call waiting
Caller ID
Humane operates its own wireless service, connected by T-Mobile [25].

Canceling a Subscription
The Humane Subscription may be canceled at any time. If the cancellation is submitted prior to next billing date, on will have access through the end of the current billing cycle. After the billing cycle ends, the subscription will be canceled. While one will still have access to the data within your account, the device will be inoperable.

Premium Add-On: International Calling

The International Calling plan allows one to make international calls to over 80 countries from the U.S. with Ai Pin. It can be added to Humane subscription for $15 per month and it includes unlimited calling to over 80 countries.

View list of countries
Premium Add-On: International Roaming
International Roaming passes allow one to use Ai Pin's phone, SMS, and data connectivity while traveling outside the U.S. in over 200 countries. One can choose from the following three International Roaming passes depending on your travel needs, all include unlimited talk, text, and data for the duration of the pass.

One can add International Roaming passes in Humane.Center and select a start date for any pass. One can buy multiple passes, but one cannot activate multiple passes at the same time. Passes can be canceled any time before their start date. Passes cannot be refunded after they have started. Passes are not available on a subscription basis.

Pass Duration & Price
1 day $5
10 days $35
30 days $50

VIII.   CONCLUSION

The Humane AI Pin is a wearable device that is designed to be an alternative to smartphones. It can be clipped to your chest and used for context-aware and screen-free personal computing. The device uses a laser to project a visual interface onto a person's palm and comes with a virtual assistant that can be as sharp as ChatGPT. It can take photos, send texts, and search the web, among other things. The device is priced at $700 and is expected to go on sale in the US starting November 16, 2023, with orders shipping in early 2024. The device is one of the first of many wearable devices expected to launch in the coming months and years that are built around the kind of ChatGPT-like AI services now used by over 100 million people each week. The device is designed to help people live more in the moment and reduce their dependency on smartphones.

REFERENCES

[1]. Humane's Ai Pin is a $700 Smartphone Alternative You Wear All Day. https://www.wired.com/story/humane-ai-pin-700-dollar-smartphone-alternative-wearable/.
[2]. Humane's Ai Pin is a $700 Smartphone Alternative You Wear All Day. https://bing.com/search?q=Humane+AI+Pin+-+A+Wearable+Device+for+Context-Aware+and+Screen-Free+Personal+Computing.
[3]. Humane AI Pin - coolthings.com. https://www.coolthings.com/humane-ai-pin-smartphone-features-screen-free-gpt-powered-wearable/.
[4]. Humane reveals the name of first device, the Humane Ai Pin.. https://hu.ma.ne/media/humane-names-first-device-humane-ai-pin.
[5]. Humane's 'smartphone killer' Ai Pin arrives sans apps and screen. https://www.newsbytesapp.com/news/science/humane-unveils-openai-powered-ai-pin-features-pricing-availability/story.
[6]. What Is Wearable Technology? Examples of Wearables | Built In. https://builtin.com/wearables.
[7]. Sensors | Free Full-Text | Wearable Devices for Ergonomics: A ... - MDPI. https://www.mdpi.com/1424-8220/21/3/777.

[8]. 6 Different Types of Wearable Technology You Must Know - 42Gears. https://www.42gears.com/blog/6-wearable-technologies-you-must-know-right-now/.

[9]. Top 10 Wearables Trends in 2023 | StartUs Insights. https://www.startus-insights.com/innovators-guide/wearables-trends/.

[10]. The Future of Wearable Tech: 10 Predictions for the Next Decade. https://techbullion.com/the-future-of-wearable-tech-10-predictions-for-the-next-decade/.

[11]. Health At Hand: Evolution, Impact, & Future Of Wearable Devices. https://www.wellable.co/blog/health-at-hand-evolution-impact-future-of-wearable-devices/.

[12]. Frontiers | Grand Challenges in Wearable Electronics. https://www.frontiersin.org/articles/10.3389/felec.2021.668619/full.

[13]. Humane's Ai Pin is a $700 Smartphone Alternative You Wear All Day. https://www.wired.com/story/humane-ai-pin-700-dollar-smartphone-alternative-wearable/.

[14]. Will AI Pin, a smartphone-enabled wearable projector, replace iPhone?. https://www.moneycontrol.com/news/technology/gadgets/will-ai-pin-a-smartphone-enabled-wearable-projector-replace-iphone-11765861.html.

[15]. Humane AI Pin With GPT-4-Powered AI Features, Built-In ... - Gadgets 360. https://www.gadgets360.com/wearables/news/humane-ai-pin-launched-wearable-projector-phone-replacement-4563156.

[16]. Wearables: Pros and Cons of Wearable Technology - GCFGlobal.org. https://edu.gcfglobal.org/en/wearables/pros-and-cons-of-wearable-technology/1/.

[17]. 5 Benefits of Wearable Technology | AB&R. https://abr.com/wearable-technology-benefits/.

[18]. Examples of the Potential Benefits of Smart Clothing - Futurside. https://futurside.com/examples-of-the-potential-benefits-of-smart-clothing/.

[19]. Pros and Cons of Wearable Technology - Digital Wings. https://digital.wings.uk.barclays/blog/pros-cons-wearable-technology-guide/.

[20]. https://www.gadgets360.com/wearables/news/humane-ai-pin-launched-wearable-projector-phone-replacement-4563156

[21]. https://tech.hindustantimes.com/wearables/news/human-ai-pin-tech-behind-this-awesome-ai-powered-wearable-71700739881766.html.

[22]. https://timesofindia.indiatimes.com/gadgets-news/explained-what-is-humane-ai-pin-how-it-works-and-what-it-does/articleshow/105138840.cms

[23]. https://www.91mobiles.com/hub/humane-wearable-ai-pn-palm-display

[24]. https://www.reuters.com/technology/wearable-ai-pin-launched-by-humane-backed-by-ex-apple-execs-microsoft-2023-11-09/

[25]. https://www.wired.com/story/humane-ai-pin-700-dollar-smartphone-alternative-wearable/#:~:text=The%20Ai%20Pin%20goes%20on, and%20data%20through%20T%2DMobile