

Let's take back the AI... and integrate it properly to our desktops.

A call to action for the Linux community to do it ourselves and do it right

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How we got here?

- **1950s-1970s**

- Turing Test
- Perceptron
- ELIZA
- First AI winter

- **1980s**

- Expert systems
- Mycin
- XCON
- Second AI Winter

- **1990s**

- Machine learning
- Decision trees, SVMs, k-NNs, naive Bayes
- Deep Blue beats Kasparov (1997)

- **2000s**

- Internet -> massive datasets.
- Geoffrey Hinton combines neural networks and deep learning (2006)
- ImageNet (2009)

- **2010s**

- AlexNet wins ImageNet using CNNs on GPUs (2012)
- Facial recognition, speech recognition in CE
- Siri, Alexa, Google Assistant, Mycroft
- AlphaGo beats Lee Sedol (2016)
- reinforcement learning, GANs, etc.

- **2020s**

- GPT-3 shows up (2020)
- ChatGPT and StableDiffusion go viral (2022)
- Multimodal AI, agents, Open Source models
- Democratization of AI

AI is everywhere

It's being used in wide variety of applications, from generating silly memes to revolutionizing protein folding.

- Common use-cases:
 - Assistants and chatbots
 - Image generation and computational photography
 - Facial recognition
 - Real-time translations
- But also:
 - Healthcare
 - Climate science
 - Accessibility
 - Physics
 - Logistics
 - Education
 - Finance



The current "state of art" on the desktop

Attempts at integrating AI tech into desktop operating systems have so far missed the mark.

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- **"Apple" Intelligence**

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A Linux desktop assistant done right should be...

My proposal for an AI assistant on the Linux desktop

- **Open Source**
- **Modular and configurable**
- **Local where possible**
- **Integrated to the desktop**
- **Know its user, but keep their secrets**

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- **Know its user, but keep their secrets** - learn from and about their user, in order to be useful, but keep data strictly on device

Features and capabilities

Inspired by others, with a twist.

- **Natural language understanding**
- **Multimodal**
- **Task automation**
- **Integration with existing tools**

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Low hanging fruit use-cases

What we could implement with current tech without too much effort

- **Calendar management**
- **Web search**
- **IM integration**
- **Context-aware screenshot OCR**
- **Translation**
- **LLM integration**
- **Work context snapshot**

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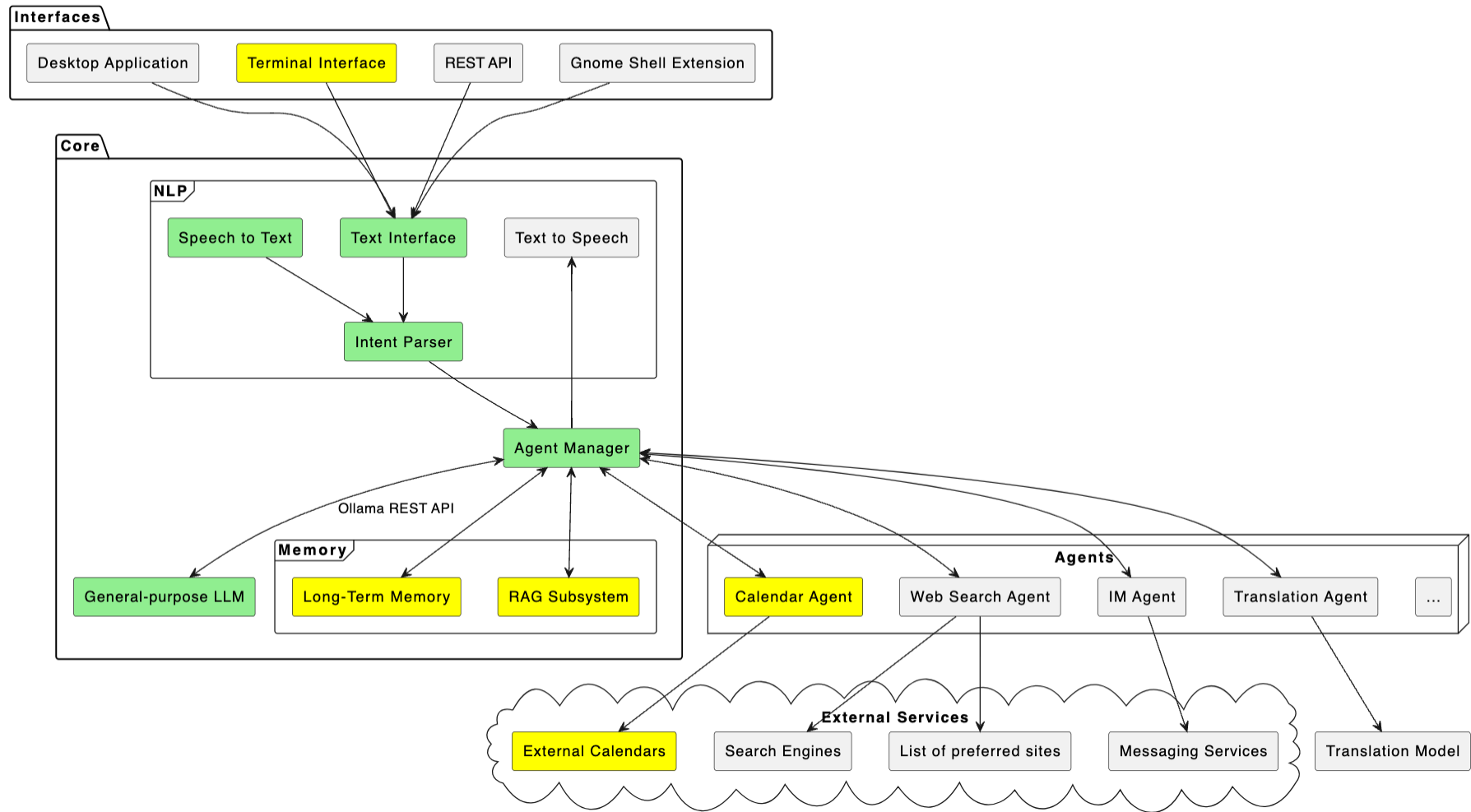
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- **Work context snapshot** - Take a snapshot of the current work context, including open files, running applications, etc. and use it to provide context-aware assistance.

Assistant architecture



The tech stack

Subject to change at any point

- **Speech to Text**

- Porcupine
- Whisper

- **Intent Parsing**

- Finetuned DistilBert-base-uncased
- DistilBert-base-uncased as tokenizer

- **General-purpose LLM**

- Ollama REST API

- **RAG Subsystem**

- ChromaDB
- LangChain
- SentenceTransformers
- PyMuPDF
- python-docx
- ebooklib
- bs4

- **Long-Term Memory**

- Embeddings model
- Generation model
- Summarization model
- FAISS or ChromaDB
- SentenceTransformers

- **Agents**

- Specific libraries
- Custom agents

- **Desktop Integration**

- GJS
- Python
- GTK4
- QT6



Q&A Time

Thank you for your attention!