On-Premises Generative AI

Use of external services like OpenAI’s ChatGPT can pose a significant risk to the security of sensitive and personal data. A researcher at the Institute for Defense Analyses (IDA) developed a simple new software package called OnPrem.LLM. The package easily extracts, labels, and generates text using large language models without risk of data loss. This summary explores OnPrem.LLM’s features and provides an example of its use.

Not long after the release of OpenAI’s ChatGPT, data security vendor Cyberhaven observed that employees across industries were sharing sensitive and privacy-protected information while interacting with the large language model. Within the defense industry, usage of such external services poses a significant security risk. However, since the release of open-source large language models like Meta’s Llama, it is now possible to efficiently run ChatGPT-like models on your own machines using non-public data, without sharing information externally. OnPrem.LLM, a simple Python package developed by IDA researcher Arun Maiya using the Python programming language, makes it easier to run large language models on-premises with non-public data.

With OnPrem.LLM, you can use ChatGPT-like large language models behind corporate firewalls and within air-gapped networks with no risk of data leakage. Applications of the tool include:

— Information extraction: extract information of interest from reports.
— Auto-annotation: classify or label passages of text using only a few ground-truth examples.
— Text generation: suggest text for emails, product descriptions, social media posts, etc.
— Code generation: generate code to solve a problem given only a short instruction or description.
— Document chatting: answer questions based on content from your own documents.

OnPrem.LLM can solve each of these tasks in as little as three lines of Python code.
In the example above, OnPrem.LLM answers questions about the 2023 National Defense Authorization Act. The software package also includes a built-in web-based user interface. This new software offers defense industry users and others the freedom to use large language models without fear the data they use will be compromised.

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