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Deep learning AI Platform – Build vs. Buy?

10 reasons why companies should think twice before developing a deep learning platform in-house.

While implementing a homegrown AI software solution has benefits, its drawbacks can be quite costly.

When planning to implement deep learning software into a machine vision application, manufacturers face a dilemma: Should they use a standard software platform to develop their models or build a framework tailored to their needs?

Many believe that designing their own platform will bring more flexibility, allowing them to tailor the solution to their own specific needs and existing processes and systems, both in the initial development and later over time. Companies also value the ownership of all IP related to a tool that might give them a competitive advantage and the ability to license that tool to subsidiaries or sister companies.

In most cases, however, such initial ambitions crash on the wall of reality. Creating and maintaining artificial intelligence (AI) software is not a trivial thing, and manufacturers whose core business is not software development often underestimate the challenges of such an endeavor or ignore them altogether.

Here are 10 reasons why companies should think twice before developing a deep learning platform in-house and should opt for buying deep learning or machine learning software instead of building from scratch.

1. Sunk Costs
2. High Effort
3. Technological Innovation
4. Validation
5. Maintenance
6. Support
7. Knowledge Transfer
8. Standardization
9. Productivity
10. Accessibility to a Larger Audience

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1. Sunk Costs

Machine vision technology has long served the manufacturing industry, which requires a particularly high level of quality control to ensure conformity with all safety regulations. Recently, deep learning has helped improve the accuracy and flexibility of machine vision inspection systems.

When one of leading manufacturers turned to Landing AI to build machine learning models with LandingLens, it had already been working for more than a year with a group of machine learning engineers in several facilities on a self-developed machine learning platform. The software was not yet ready to be implemented and was so complex to operate that only two machine learning experts were able to use it. Completing the project would have cost another three years of development for an estimated $1.5 million, and maintaining the software would have cost another $3 million over the same period.

The company decided to stop the project and instead use LandingLens, an end-to-end deep learning platform, which proved much easier and faster to implement, with a larger team able to collaborate on development and at a much lower overall cost.

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2. High Effort

Building a deep learning platform is not trivial. It requires significant resources with an equally high level of expertise. Many companies either don't have these resources or need to pull them out of their core business software development resources. Some decide to pursue a custom solution and outsource the development, but this external resource comes at a cost too. In any case, programming your own deep learning platform will cost a lot of time and money, with little predictability about when the solution will be ready for production.

3. Technoogical Innovation

AI is an area of extremely fast-paced innovation. New research and development from both academia and industry keep pushing the boundaries of what is possible with deep learning and machine learning. It is hardly possible for a company whose core business is not AI software specifically designed for computer vision to keep up to date with the technology. As a result, homegrown solutions tend to be out of date before they even go into production.

4. Validation

Developing great software is one thing, but it also needs to be properly validated to be fully reliable. This applies to both the deep learning platform itself and the models developed upon it. Do you have the capabilities to perform such validation? Does your platform include robust validation workflows for the learning models that will be trained upon it? If you cannot confidently answer yes to these two questions, you'd better look for a proven third-party solution.

5. Maintenance

Software cannot be limited to its initial development; it must be maintained to ensure seamless operation over time. This work involves not only the software itself but also its interfaces with other systems, such as cloud computing platforms or enterprise software. Any update on their side must be verified and validated in any proprietary software to ensure the systems still communicate seamlessly with each other.

6. Support

As with maintenance, user support is needed over the whole lifetime of the software. This is essential for tools that are used to ensure quality on a production line, with a high cost for poor quality. Fast response time — ideally 24/7 support — is needed to secure fast troubleshooting. The more users who implement the software, the more support capabilities are needed. There too, if you don't have the resources to provide that support, a third-party software solution might be the better answer.

7. Knowledge Transfer

To secure maintenance and support over time, one of the major challenges for companies developing their own solutions is knowledge transfer. Most of the time, the developers who design a solution move on to other roles or leave the company after completion of the project. Who will take over maintenance and support? Are these staff properly trained? Is comprehensive documentation available so that future staff can easily jump in?

8. Standardization

Standardization of processes is an essential factor of efficiency in a manufacturing organization. The more standardized the workflows of a deep learning platform, the more consistent, controllable, and shareable the outcome. In-house developments tend to be less structured than standard solutions, whereas standard solutions allow for more deployments across multiple locations with more complex support.

A solution like LandingLens ensures more standardized processes and shorter development times. Additionally, the software is accessible to a wider audience of operational experts, who can contribute their knowledge of the product and manufacturing processes. The results show that third-party software is a more practical and effective solution.

9. Productivity

Your company might be able to build a deep learning platform in-house that allows your staff to train models for their vision applications. But how fast will users be able to bring their models into production? Third-party software builds on years of experience and ongoing optimization and includes powerful tools to speed up the development process by up to a factor of 10.

10. Accessibility to a Larger Audience

One key reason users of third-party software solutions reach their goals faster is that homegrown tools are typically not optimized for ease of use. Not only does that slow down the process of developing models, but it also limits the group of potential users to staff with advanced AI/programming skills. With third-party deep learning software specifically designed for industrial inspection applications, more people can build and deploy impactful solutions throughout the organization, especially those with less programming skills but a deeper operational knowledge of manufacturing processes, defects, and so on.

Quite often, companies that decide to go for a homegrown solution don't have solid answers to these questions. This can be a ticking time bomb when the platform goes into production.

Building a deep learning learning platform in-house may look like a good idea at first glance, but in most cases, it turns out to be more complex, time-consuming, and expensive than implementing a third-party software solution. This is because homegrown solutions take a lot of time and resources to develop. Other problems include less AI expertise on the part of developers, less robust validation, and poor maintenance and support capabilities due poor documentation and knowledge transfer.

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About LandingLens

LandingLens is an industry-first data-centric artificial intelligence (AI) visual inspection platform. It helps improve inspection accuracy and reduce false positives. The end-to-end platform standardizes deep learning solutions that reduce development time and scale projects easily to multiple facilities across the globe. Our focus remains on our customers and continual product innovation to solve the real-world problems of the manufacturing audience. To learn more, visit: www.landing.ai and follow Landing AI on Twitter and LinkedIn.

About Landing AI

Landing AI™ is pioneering the next era of AI in which companies with even limited data sets can realize the business and operational value of AI and move AI projects from proof-of-concept to full scale production. Guided by a data-centric AI approach, Landing AI's flagship product is LandingLens™, an enterprise MLOps platform that offers to build, iterate, and operationalize AI powered visual inspection solutions for manufacturers. With data quality being key to the success of production AI systems, LandingLens™ enables users to achieve optimal data accuracy and consistency. Founded by Dr. Andrew Ng, co-founder of Coursera, former chief scientist of Baidu, and founding lead of Google Brain, Landing AI is uniquely positioned to lead the development of AI from a technology that benefits a few to a technology that benefits all.

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