

# AI Engineer Skills Checklist PDF Page

## AI Engineer Skills Checklist PDF Page: Content + <head> (Uncodemy)

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**Prepared:** 26 October 2026 · **Primary keyword:** ai engineer skills checklist pdf · **Search volume:** not checked (keyword tool out of credits); verify in Search Console.

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### PART 1: Page plan

| Item                          | Decision                                                                                                                                                                   |
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| Final URL                     | <a href="https://uncodemy.com/ai-engineer-skills-checklist-pdf">https://uncodemy.com/ai-engineer-skills-checklist-pdf</a>                                                  |
| Intent (anti-cannibalisation) | SKILLS CHECKLIST for AI engineers. The ordered roadmap is on the AI engineer learning path page.                                                                           |
| Why not thin                  | Explainer-style sections, FAQs and cross-links make the page useful even without a download                                                                                |
| Schema                        | WebSite, Organization, Breadcrumb, CollectionPage, FAQPage (only FAQs visible on the page). PDF <code>ItemList</code> provided commented, to enable after titles are final |
| Share image                   | <a href="https://uncodemy.com/image/logo-og.jpg">https://uncodemy.com/image/logo-og.jpg</a> for now; custom 1200x630 card recommended                                      |

### PART 2: Page content (copy-paste ready)

**SEO Title** (43 chars):

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**Meta Description** (133 chars):

Download the AI engineer skills checklist PDF from Uncodemy: programming, maths, ML, deep learning, LLM and MLOps skills with levels.

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**Byline:** Prepared by the Uncodemy trainer team [CONFIRM: author name and role] · Reviewed by [CONFIRM: reviewer name and role] · Last reviewed: [DATE]

#### Quick Answer

This page offers Uncodemy's AI engineer skills checklist as a PDF download. It lists the skills an AI engineer is expected to build, grouped by area and by level, so you can mark what you already know and see what is missing. Use it to plan study, review a portfolio or prepare for interviews.

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[CONFIRM: one line on what it covers and who it is for] · [N] pages · [X] MB · PDF · Updated [DATE]  
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What an AI engineer does

The title AI engineer is used differently by different employers, so the checklist starts with a working definition. An AI engineer builds software systems that use machine learning models: collecting and preparing data, training or adapting models, evaluating them, wrapping them in services and keeping them working in production. In recent years many roles focus on applications built on pretrained large language models, where the work is prompt design, retrieval, evaluation and integration rather than training from scratch. Other roles lean towards classical machine learning, computer vision or MLOps. Read job descriptions carefully and tick the skills that match the roles you want, rather than trying to master every box at once.

Skill areas at a glance

| Area                 | Core idea                                                | Why it matters                             |
|----------------------|----------------------------------------------------------|--------------------------------------------|
| Programming          | Python, version control, testing                         | Every other skill is applied through code  |
| Maths and statistics | Linear algebra, probability, statistics, calculus basics | Needed to understand models and evaluation |
| Data skills          | SQL, pandas, cleaning, feature work                      | Models are only as good as their data      |
| Machine learning     | Supervised and unsupervised learning, evaluation         | The foundation under most AI systems       |
| Deep learning        | Neural networks, frameworks, transformers                | Behind vision, speech and language models  |
| LLM applications     | Prompting, retrieval, agents, evaluation                 | Most current AI engineer job openings      |
| MLOps and deployment | APIs, containers, monitoring, pipelines                  | Moves models from notebook to production   |
| Responsible AI       | Bias, privacy, safety, transparency                      | Reduces harm and business risk             |
| Communication        | Explaining trade-offs, documenting, collaborating        | AI work is a team activity                 |

Checklist: programming and data

| Skill            | Beginner                       | Working level                                     | Strong                                   |
|------------------|--------------------------------|---------------------------------------------------|------------------------------------------|
| Python           | Syntax, functions, collections | Classes, modules, virtual environments, packaging | Typing, async, performance profiling     |
| Git              | Commit, push, pull             | Branches, pull requests, resolving conflicts      | Release workflows and code review habits |
| SQL              | SELECT, WHERE, GROUP BY        | Joins, CTEs, window functions                     | Query tuning and data modelling          |
| pandas and NumPy | Load, filter, summarise        | Merge, reshape, vectorised operations             | Memory and speed optimisation            |
| Testing          | Run basic tests                | Write unit tests with pytest                      | Test data and model behaviour            |

Checklist: maths and machine learning

| Skill                      | Beginner                             | Working level                                            | Strong                                      |
|----------------------------|--------------------------------------|----------------------------------------------------------|---------------------------------------------|
| Linear algebra             | Vectors and matrices                 | Dot product, matrix multiplication, dimensionality ideas | Decompositions and their uses               |
| Probability and statistics | Mean, variance, distributions        | Hypothesis tests, confidence intervals, Bayes rule       | Experiment design and causal thinking       |
| Calculus                   | Derivative meaning                   | Gradients and the chain rule                             | Optimisation behaviour                      |
| Supervised learning        | Regression and classification basics | Trees, ensembles, regularisation, cross-validation       | Calibration, imbalance, feature engineering |
| Evaluation                 | Accuracy                             | Precision, recall, F1, ROC AUC, error analysis           | Metric choice tied to business cost         |
| Unsupervised learning      | Clustering idea                      | K-means, PCA                                             | Evaluation without labels                   |

Checklist: deep learning and LLM applications

| Skill                          | Working-level indicator                                                 |
|--------------------------------|-------------------------------------------------------------------------|
| Neural networks                | Can explain layers, activation, loss and backpropagation in plain words |
| A deep learning framework      | Can train and evaluate a small model with PyTorch or TensorFlow         |
| Transformers                   | Can describe attention and tokenisation at a high level                 |
| Prompt design                  | Writes clear instructions, examples and output formats and tests them   |
| Retrieval-augmented generation | Can chunk documents, embed, retrieve and cite sources                   |
| Agents and tools               | Can let a model call functions with validation and limits               |
| LLM evaluation                 | Has a test set and measures quality, cost and latency                   |
| Vector search                  | Understands embeddings, similarity and index trade-offs                 |

Checklist: production and responsibility

|  |  |
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| Skill                     | Working-level indicator                                      |
|---------------------------|--------------------------------------------------------------|
| APIs                      | Can wrap a model behind an HTTP service with validation      |
| Containers                | Can build a container image and run it                       |
| Cloud basics              | Can deploy a small service on one cloud platform             |
| Monitoring                | Tracks latency, errors, cost and quality drift               |
| Data and model versioning | Can reproduce a past training run                            |
| Security and privacy      | Avoids leaking secrets and personal data to prompts and logs |
| Bias and fairness         | Checks performance across relevant groups                    |
| Documentation             | Writes model cards or notes about limits and intended use    |

## How to use the checklist

1. Print or copy the tables and mark each row honestly: not started, learning, working, strong.
2. Choose a target role and keep only the rows that role requires.
3. Pick the three lowest-scoring important rows and plan a project that uses them.
4. Re-check every month and record evidence, such as a repository link or a short write-up.
5. Before applying, make sure each claimed skill on your resume can be shown in a project.

## Soft skills that separate good candidates

- Turning an unclear business question into a measurable problem.
- Explaining model limits and risks to non-technical colleagues.
- Reading research summaries and documentation without being overwhelmed.
- Estimating effort and cost, including the cost of calling hosted models.
- Collaborating with data, product and engineering teams.

## Common mistakes

- **Collecting tools without depth.** Knowing ten libraries superficially is weaker than building two complete projects.
- **Skipping the basics** such as data cleaning and evaluation.
- **Only following tutorials** and never building something original.
- **Ignoring deployment**, so projects never leave the notebook.
- **Ignoring cost and safety** in language model projects.

## Related Unacademy resources

- [AI Engineer Learning Path PDF](#)
- [AI Project Ideas PDF](#)
- [LLM Application Development Guide PDF](#)
- [Generative AI Tools Guide PDF](#)

### Learn with a trainer [use only the line that is true]

- **Generative AI / Agentic AI course:** [CONFIRM URL]. [CONFIRM] Planned course: link only once the page is live; otherwise use <https://unacademy.com/all-courses>

(One soft call to action: course link or free demo. No pop-up.)

## About these PDFs

These PDFs are study material for learning and revision. They are not a certificate, a degree or a promise of a job, and technology changes, so check official documentation for the latest details. Spot an error? Write to [CONFIRM: feedback email] and the trainer team will review it.

## Frequently Asked Questions

### What skills does an AI engineer need?

Python and software engineering, data skills including SQL, maths and statistics, machine learning, deep learning, LLM application development, deployment and monitoring, and responsible AI practice.

### Do I need strong maths to become an AI engineer?

You need working knowledge of linear algebra, probability, statistics and basic calculus. Application-focused roles need less depth than research roles, but you should understand how models and metrics behave.

### Is Python enough for AI engineering?

Python is the main language, but SQL, Git, command-line skills and some knowledge of deployment tools are also expected.

### What is the difference between a machine learning engineer and an AI engineer?

Titles overlap. Machine learning engineer often means training and deploying models, while AI engineer increasingly means building applications on top of pretrained models. Check each job description.

### How do I show my AI skills to employers?

Publish projects with clear documentation, evaluation results, honest limitations and deployed demos where possible.

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