AI Project Checklist

A comprehensive guide for planning, building, and deploying AI systems responsibly

1. Problem Definition & Scoping

- [ ] Define the business problem and success criteria
  What does 'good' look like? Define KPIs upfront.
- [ ] Identify stakeholders and end users
- [ ] Assess feasibility: Is AI the right solution?
  Consider rule-based alternatives first.
- [ ] Set project timeline, budget, and resource plan
- [ ] Document ethical considerations and risk appetite
  Bias, fairness, privacy, regulatory exposure.

2. Data Collection & Management

- [ ] Identify and audit available data sources
  Internal DBs, APIs, third-party datasets, etc.
- [ ] Assess data quality: completeness, accuracy, consistency
- [ ] Define data labeling strategy (if supervised learning)
  In-house vs. crowdsourced vs. automated.
- [ ] Establish data governance and access controls
- [ ] Ensure compliance with data privacy regulations
  GDPR, CCPA, DPDP Act, or applicable local law.
- [ ] Create data versioning and lineage tracking plan

3. Exploratory Data Analysis (EDA)

- [ ] Perform statistical profiling of datasets
- [ ] Visualize distributions, correlations, and outliers
- [ ] Identify missing values and define imputation strategy
- [ ] Validate data assumptions with domain experts

- [ ] Document EDA findings and key insights

4. Model Development

- [ ] Select modeling approach (ML, DL, LLM, rules, etc.)
  Justify choice against problem requirements.
- [ ] Establish baseline model or heuristic benchmark
- [ ] Define feature engineering pipeline
- [ ] Choose evaluation metrics aligned with business goals
  Accuracy alone is rarely sufficient.
- [ ] Train, validate, and tune candidate models
- [ ] Perform cross-validation and hyperparameter search
- [ ] Document all experiments in a tracking system
  MLflow, W&B;, or similar.

5. Model Evaluation & Fairness

- [ ] Evaluate model on held-out test set
- [ ] Audit for bias across demographic subgroups
- [ ] Conduct error analysis on failure cases
- [ ] Stress-test with adversarial or edge-case inputs
- [ ] Obtain sign-off from stakeholders on model performance

6. Infrastructure & MLOps

- [ ] Design serving architecture (batch vs. real-time)
- [ ] Set up CI/CD pipeline for model updates
- [ ] Implement model versioning and rollback capability
- [ ] Configure monitoring: drift, latency, error rate
- [ ] Define alerting thresholds and on-call runbook
- [ ] Document infrastructure costs and scaling plan

7. Deployment & Integration

- Containerize model (Docker / Kubernetes)
- Complete API design and integration testing
- Run load and stress tests in staging environment
- Conduct A/B test or canary rollout plan
- Prepare rollback and incident response procedures
- Complete security review and penetration testing

8. Documentation & Governance

- Write model card: purpose, limitations, metrics
- Document data lineage and preprocessing steps
- Create user-facing documentation and FAQs
- Establish model review and retraining schedule
- Archive all artefacts for auditability
  Code, data snapshots, configs, model weights.

9. Post-Launch Monitoring

- Monitor model performance vs. baseline continuously
- Track data and concept drift over time
- Collect user feedback and edge-case reports
- Schedule periodic re-evaluation and retraining
- Review business impact metrics quarterly

■ = Not started | Use this checklist at each project phase — revisit earlier stages when requirements change.