### **AI Fairness Projects – Completed**

* Process: Dataset → Bias Detection → Mitigation → Metrics → Code + Docs + Matrix.
* Tools: **Fairlearn**, **Scikit-learn**, **Pandas**.
* **Status**: ✅ Complete!

### **2️⃣ Explainability Projects – Slightly Different Process**

#### **🔧 Key Differences:**

* Focus on **interpreting models**, not just bias fixing.
* Uses **SHAP**, **LIME**, **PDP** for **model insights**.

#### **🛠 Workflow:**

1. Train a model (e.g., **Random Forest**, **XGBoost**).
2. Apply **SHAP**, **LIME**, **PDP** for **explainability**.
3. Visualize **feature importance**, **local predictions**.
4. Metrics: **Local Accuracy**, **Consistency**, **Fidelity**.

#### **📝 Documentation Focus:**

* Explain **why the model made a decision**.
* **Visual-based documentation** (plots, graphs).
* Highlight how **decision-makers** can **trust AI**.

#### **✅ Yes, Same Structure Applies:**

* **Code**: Train model + Explainability tools.
* **Docs**: Explain results + visuals.
* **README**: Summary + Key code + Insights.
* **Matrix**: Explainability technique + Model + Metrics + Key Visuals + Learnings.

### **3️⃣ Governance Projects – Mostly Process, Less Code**

#### **🔧 Key Differences:**

* **Less about coding**, more about **compliance, risk, policy**.
* Involves **AI governance tools**, **checklists**, and **documentation**.

#### **🛠 Workflow:**

1. Perform **Model Auditing** (Bias + Explainability checks).
2. Create **AI Risk Assessment Reports**.
3. Develop **Policy Documentation** (EU AI Act compliance, etc.).

#### **📝 Documentation Focus:**

* **Policy Reports**, **Audit Trails**, **Compliance Checklists**.
* Deliverables: **PDF/Word Docs**, **Governance Summaries**.

#### **⚙️ Partial Coding:**

* Some code for **bias logging**, **risk evaluation**.
* Mostly **manual assessments** + **documentation**.

#### **✅ Adapted Structure Applies:**

* **Code** (Limited): Bias logs, risk score calculations.
* **Docs**: Compliance analysis, responsible AI policy.
* **README**: Governance tools used, reports generated.
* **Matrix**: Regulation focus, tools, outcomes, key insights.

## **🏆 Unified Structure – Customized Per Category:**

| **Category** | **Code Level** | **Docs Type** | **Matrix Columns** |
| --- | --- | --- | --- |
| AI Fairness | Full coding (Fairlearn) | Bias Detection, Mitigation, Results | Model, Bias, Metric, Fix, Accuracy, Challenges |
| Explainability | Medium coding + Visuals | Model Interpretations, Plots | Model, Technique, Visuals, Insights, Trustworthiness |
| Governance | Light coding + Policy | Compliance Docs, Audit Trails, Risk Logs | Compliance Focus, Tools, Deliverables, Policies |