Week 2: Git + Python Fundamentals

Full Stack RAG with Local LLM

Semester 2/2568

Agenda

1. Git Fundamentals
2. Python Fundamentals
3. Environment Setup
4. Lab 1

Why Git?

Version Control System

- Track changes in your code
- Collaborate with others
- Revert to previous versions
- Branch for new features

Git Basic Commands

```
# Clone repository
git clone https://github.com/amornpan/Generic-RAG.git

# Check status
git status

# Add and commit
git add .
git commit -m "Add new feature"

# Push to remote
git push origin main
```

Python Data Types

```python
# Type hints
name: str = "RAG System"
count: int = 42
score: float = 0.95
is_active: bool = True

# Collections
items: list = [1, 2, 3]
config: dict = {"model": "bge-m3"}
```

Python Classes

```
class Document:
    def __init__(self, title: str, content: str):
        self.title = title
        self.content = content

    def get_summary(self) -> str:
        return self.content[:100] + "..."
```

Conda Environment

```
# Create environment
conda create -n rag_env python=3.10 -y

# Activate
conda activate rag_env

# Install dependencies
pip install -r requirements.txt
```

Lab 1: Git + Python (3.75%)

Tasks:

1. Fork Generic-RAG repository
2. Clone to local machine
3. Create conda environment
4. Create feature branch
5. Write Python OOP example
6. Commit and push

Deadline: Sunday 23:59

Questions? See you in Lab 1!