1) System Architecture and Design Decisions

Overall Architecture

Data Input Layer: CV files (e.g., CV_1.pdf … CV_5.pdf).

Extraction & Normalization Layer: Convert CV text into structured fields (name, current_title, locations, companies, schools, skills, experience, education, etc.).

Intelligence & Matching Layer (Agent + MCP tool integration):

Use an MCP-style pipeline to call external tools for field alignment and candidate matching.

Tools include LinkedIn-style retrieves, profile backtracking, and related profile data sources.

Workflow: extract fields → call candidate retrieval → select Top-K → LLM-based matching against CV summary → aggregate results.

Evaluation & Aggregation Layer: Score and verdict per CV, then aggregate into final_score and verdict.

Output Layer: Present final_score and verdict, with concise justification.

Key Design Trade-offs

Simple scoring: final_score in [0,1], threshold 0.5; >0.5 → yes, <0.5 → no; indeterminate → unknown.

Modular structure: separate components for extraction, retrieval, judgement, and aggregation to allow easy substitution or extension.

Minimal external dependencies: wrap external tools behind stable interfaces to keep the demo focused and reproducible.

Data & Samples

Demonstration uses CV_1.pdf to CV_5.pdf, aligned with the notebook's outputs for validation.

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2) Agent Workflow and Tool Usage Strategy

MCP Tools & Roles (Overview)

LinkedIn-related tools: fetch professional profiles, work history, education, and other career data.

Facebook-related tools: expand social graph data and public profile snippets.

Profile/Interaction tools: gather fuller profile data to support evidence-based evaluation.

Workflow Execution Points

Field extraction: regex + NLP prompts to form a CV summary with structured fields.

Retrieval: query candidate profiles across sources, then select Top-3 candidates.

Judgement: LLM assesses alignment between CV summary and candidate data, producing structured match signals (e.g., li_matches, fb_matches).

Aggregation: simple fusion of LinkedIn and Facebook judgments to yield final_score.

Output: final_score and verdict with a brief justification suitable for summarizing results.

3) Sample Verification Results (Final Results Only)

Threshold is 0.5; scores > 0.5 indicate yes, < 0.5 indicate no; unknown when indeterminate.

- CV_1.pdf
    - final_score: 0.20
    - verdict: no
- CV_2.pdf
    - final_score: 0.20
    - verdict: no
- CV_3.pdf
    - final_score: 0.985

    - verdict: yes
- CV_4.pdf
    - final_score: 0.20
    - verdict: no
- CV_5.pdf
    - final_score: 0.20
    - verdict:no