

iChat-Job: Designing Self-Determination Theory-Grounded System with Digital Humans for Increasing University Graduates' Employability

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Abstract: University students often struggle with resume writing, career direction, and interview preparation. Existing AI job tools focus on short-term optimisation rather than educational development. This paper presents iChat-Job, an SDT-grounded AI career development system supporting (1) resume and portfolio building, (2) labour-market-aligned career pathway recommendations, and (3) digital-human interview simulation with formative feedback. The system operationalises autonomy, competence, and relatedness, integrates privacy-preserving local analysis, and includes a lightweight growth-tracking mechanism. It offers a theory-driven approach for scalable employability training and outlines planned formative evaluation.

Keywords: Employability training, Digital learning, Self-determination theory, Digital human, Interview simulation

1. Introduction

Graduates face increasing challenges in crafting effective resumes, identifying job opportunities, and preparing for interviews. Traditional career services lack personalisation and real-time support. Commercial AI tools provide resume polishing and job matching but rarely incorporate educational theory (Chiu, 2023). This study introduces iChat-Job, a system designed to enhance employability through SDT-grounded support.

2. Relevant Literature

2.1 Existing AI job recommendation and career development platforms

Many platforms rely on algorithmic matching (Padma et al., 2024) without theoretical grounding, resulting in superficial guidance and reduced long-term engagement (Sohana et al., 2024). They often fail to address intrinsic motivation, non-linear career paths (Chiu, 2023), and students' psychological needs, leading to anxiety and disengagement (Holding et al., 2020). Commercial platforms optimise for rapid matching rather than holistic development.

2.2 Self-Determination Theory (SDT)

SDT highlights three needs—autonomy, competence, and relatedness—as foundations for sustained motivation (Deci & Ryan, 2012). SDT offers a powerful lens for understanding motivation and sustainable career engagement in individuals' job-seeking process (McAnally, K., & Hagger, 2024). In vocational contexts, satisfying these needs supports resilience and clearer career direction (Chen, 2017). iChat-Job adopts SDT as its design framework.

3. Design of iChat-Job System

3.1 SDT as a theoretical framework

The system translates SDT (Deci & Ryan, 2012) into design requirements: autonomy through meaningful choices; competence through rubric-based feedback and progress indicators; and relatedness through supportive digital-human coaching.

3.2 Features of the iChat-Job System

Table 1 aligns system features with SDT needs. Each new feature requires an explicit SDT rationale and a visible indicator such as goal choices or progress milestones.

Table 1. The matrix for aligning features of iChat-Job system with SDT

Feature	Autonomy	Competence	Relatedness
Set goals	Students choose target roles, industries, and location.	Milestones and progress timeline visualize improvement.	Supportive reflection prompts encourage persistence.
CV Building	Choice of templates and style, student-controlled iteration.	Checklist/rubrics and revision suggestions guide improvement.	Coaching-style guidance reduces stress and confusion.
Job Matching	Multiple plausible pathways are offered with trade-offs.	Skill gaps are translated into actionable learning tasks.	Alignment to learner goals signals “the system understands me”.
Interview Training	Students choose target position and interview style/avatar.	Formative feedback (score + suggestions) supports practice loops.	Supportive, low-pressure interaction fosters relatedness.

Figure 1 Presents four phases of student learning career-ready skills using the iChat-Job system.

Figure 1.

Four phases of student learning career-ready skills using iChat-Job

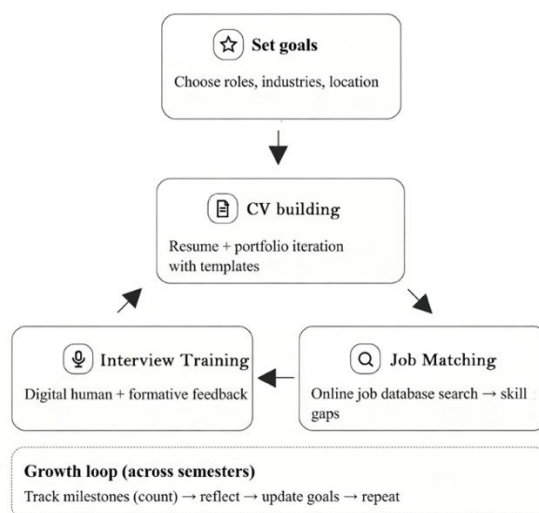


Figure 1 summarises the user journey: goal setting, resume/portfolio iteration, job-market-aligned skill-gap identification, and digital-human interview practice, with a growth loop across semesters.

3.3 Resume and Portfolio Development

Students upload resumes and use curated templates. Local data masking protects privacy before analysis. A local vision-language model identifies missing fields and issues, offering targeted suggestions. The system supports iterative improvement without replacing student agency.

3.4 Career Pathway Recommendation

The system analyses resume signals and job-market data to recommend career directions and learning pathways. It presents multiple plausible pathways, highlights trade-offs, and identifies skill gaps with actionable steps.

3.5 Digital-Human Interview Simulation

The simulator provides real-time voice interaction with five interviewer personas. It generates position-aligned prompts, evaluates performance across six dimensions, and visualises results via radar charts. The digital human acts as a supportive trainer to reduce anxiety (Kiuchi et al., 2024; Yusuf et al., 2025). Figure 2 shows the real-time interview interface with lip-synchronised 2D avatars.

4. System Architecture

Figure 3 presents the modular architecture: a web frontend for resume building, job matching, and interview simulation; a backend for AI orchestration and data management; and external components including job-database search and digital-human rendering. A growth dashboard visualises milestones and supports SDT-aligned reflection (Lee & Kim, 2025).

Figure 2.

The digital-human real-time voice interview interface of iChat-Job, showing the Spine 2D avatar with lip-synchronised coaching interaction.

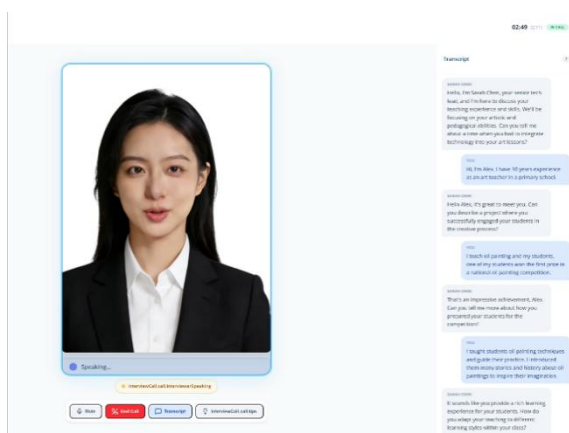


Figure 3.

System architecture of iChat-Job.

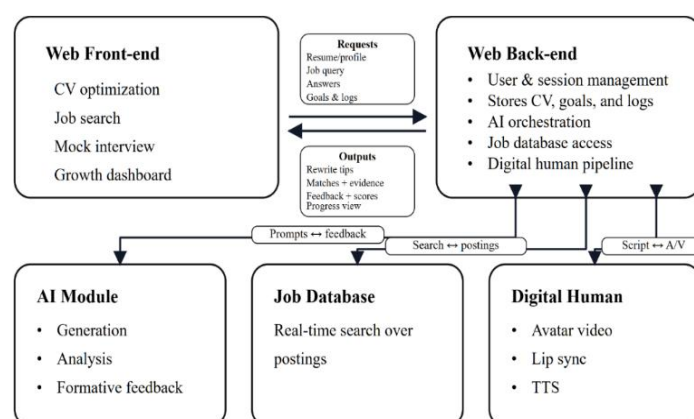


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5. System Features

A lightweight growth mechanism makes SDT visible: students set goals, track resume iterations and interview practice, and review progress. The system can be integrated into workshops or used independently. Limitations include the need for large-scale evaluation, bias mitigation, and strong privacy safeguards.

6. Future Work

Planned enhancements focus on strengthening both learning effectiveness and system transparency: the team will conduct a formative pilot study to evaluate how well the platform supports students' SDT needs, develop richer explainability features that clarify how skill-gap evidence is generated, expand portfolio tools to better support multimedia artefacts and collaborative creation, and build longitudinal career-path analytics that enable more adaptive, personalised support over multiple semesters.

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