Use of AWS Lex in a Taskoid based non-animated assisted teaching system.

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Abstract:

A formal formulation of the Task and work quantification system of Taskoids for A.I assisted in teaching using AWS Sumerian and Lex. We define the taskoids TAv1.0 and TAv2.0, the 2.0 version being animated.
Taskoids are viewed as intention machine evolution with an EdTech framework for work-study based MOOC courses to assist in machine evolution and SaaS-based automation.

Keywords: AWS Sumerian, Lex, Taskoid, ppt presentations, document storage, AWS s3, intents, AWS Lambda, Automation of Teaching.

What:

We define a Taskoid for a SaaS-based design of two versions of a Teaching Assistant with a conversational UI to a slide-based talk and a question and answer session. We define a formal framework for the Taskoid definition.

How:

The formal system is defined in a symbolic algebraic and DOM format with an axiomatic proof. The code is implemented in python using AWS CLI and Lex JSON objects.

Why:

The increased need for classroom and online education has led to scalability concerns and cost of education, addressed by the automation of teaching especially in the graduate curriculum in the Udacity learning model, of automated slide talks and QnA sessions. Automated grading has already been incorporated in the Udacity Model. Thus graduate MOOC courses can easily be assembled just in time using the slide presentations, QnA service and suggested readings with automated grading and feedback software.

So What:

The promise of free graduate education and work-study positions to move the graduate student community beyond the low-income status is finally possible within the Udacity Learning Model. Automated components with Taskoids enable easier formulation of MOOC content and presentation, and low code blueprints called Taskoids, allow for production coding in course work, allowing work-study positions of true resource usage at 40 hours per week, allowing for compensation on par with the industry internships.
Hence implementing True EdTech models.

Summary:

Main Points:
Definition of TAv1.0 and TAv2.0
Definition of DOM models of Slide presentations and NoSQL document storage and intents with responses and Lambdas.
Theorem to prove blueprints for JSON formulation of Lex interface for the Taskoid.
The completeness with Bing/Google API, faculty intervention or persistence for future research.

Applications:

MOOC Graduate course creation, automation of telepresence talks in seminars and conferences. Automation of classroom teaching.

Code Base:Github.(in progress)

Introduction.

AWS Sumerian and Lex are two new technologies for A.I assisted text to animation, text to speech and the creation of conversational and multimodal UI.(“Website” n.d., “Website” n.d.; Barbaschow 2019)
RMIT, Royal Melbourne Institute of Technology is an example of an AWS Educate based venture providing online eLearning content using Sumerian.

SaaS-based automation and low code solutions were invented in the previous decade and are now by solutions like AWS Blueprints, Pega Automation, and Twilio communications to name a few.(“Gartner Magic Quadrant for Low-Code Application Platforms 2019 | Appian Google Ad” n.d.)(“Gartner Magic Quadrant for Low-Code Application Platforms 2019 | Appian Google Ad” n.d., “Website” n.d.)(“Digital Process Automation” 2018)

Problem Definition.

Given a slide presentation with notes,
Let each slide S have a DOM model with note object n. The DOM model of the presentation will be a collection with the ordering of the slides S_i.
Given a set of documents D and a QnA document with a DOM structure of [intents, Answer], we define a Taskoid using AWS for A.I assisted teaching, creating a conversational UI for the presentation of the slides and for answering questions.

Background.

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Formal Definitions:

A. I assisted Teaching with Sumerian and Lex. V 1.0

Definition 1.0:
A. I assisted teaching is defined as the existence of a conversational UI for the presentation of Slides, SP. and the answering of questions related to SP, with knowledge depicted by the documents set D and a document of intents and answers for training the knowledge data structures of the conversational UI.

Definition 1.1:
In version 1.0 we define the use case of a conversational UI based Taskoid, TAv1.0 with AWS Lex based conversational U.I, in version 2.0 we also define a Sumerian based scene, and asset integration. for Taskoid TAv2.0.

Theorem 1.3:
The Taskoid TAv1.0 or v2.0 uses a blueprint TAb to automate the creation of the conversational UI from the input documents from a cloud storage location. There always exists a blueprint for all SP and D.
The proof is axiomatic in the text to speech conversion of notes n, for each S and in the completeness of the knowledge in D.
If there does not exist an answer to intent in a question then:
1. There is a default answer and three Lambdas are implemented.
a. ask for human intervention.
b.search the internet for an answer.
c.store question and contact information of questioner for later analysis.

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Discussion.

Taskoid based automation and machine genome, is an offshoot of evolutionary computing where loss or fitness functions

are defined for the applicability of taskoids to use cases, in lieu of a natural selection model, we use the MFA II model of intentional evolution where innovation is the creation of evolution in A.I assisted instruction in the design of taskoids and a machine genome representation with a transcription defining the intention.
In the case of a JSON or YAML definition of a Lex based automation and an extension to Sumerian, the intent of customization is redundant and hence there is no mention of the machine genomic basis in this paper.

Future Work.

In the next publication, we define a broader set of taskoids with a YAML or JSON based representation. We define machine genome definitions in an object format using the JSON and YAML definitions and define transcription as intention.

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