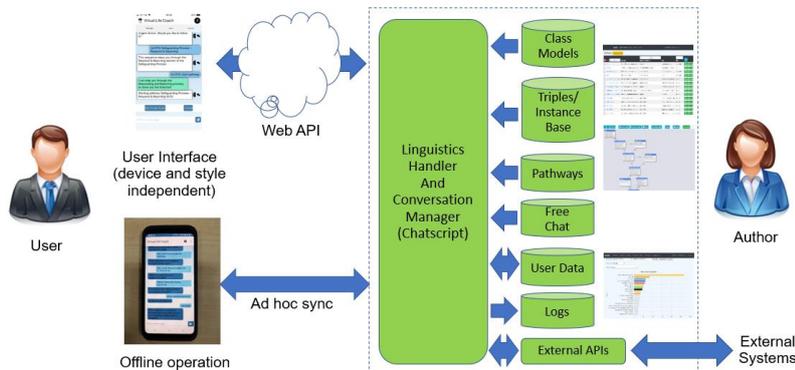


Discourse Evolving – Delivering a More Flexible Chatbot



Discourse is the name we have given to our core chatbot system ever since the mid 2000s. Back then Discourse was based on a modified version of the Artificial Intelligence Markup Language (AIML). It surprises us even now how many academic chatbot projects still seem to use AIML, but like a lot of other people we've moved on from AIML as a core approach. Whilst many people talk about machine-learning based approaches to Natural Language Understanding (NLU/NLP) most of the systems on the market are using very small data sets – typically just half a dozen versions of each input, so barely count as “proper” neural net type machine-learning. Also, we find that for many of our clients there just isn't the training data to build a decent machine-learning type system.

So at the moment we tend to use Chatscript (an open source chatbot engine) as our go-to platform, but in using it in project after project we've begun to evolve a new version of Discourse. The aim of this new version is to try and hide much of the linguistic element from the author. In our mind the author should not be having to worry too much about how the user is going to phrase things, they should just be concerned with building the knowledge bank that the chatbot is going to work with. We've identified four types of “conversation” that a chatbot has, and are providing the capability for each within the Discourse:

- Data/knowledge searching and requests (what is..), from local sources, or via web services to remote sources
- Taking instructions and requests (book me...)
- Following processes (how do I..., should I...)
- Undirected chat (incl smalltalk) (I'm feeling..., how are you...)

Another big step we've taken with the new version of Discourse is to allow it to operate on a mobile offline. Switch to Airplane Mode with most popular chatbots (e.g. Wyse, Woebot, Messenger/Slack bots) and they just stop working. With Discourse all the key knowledge can be sync'd to the mobile, and a simplified chatbot (based on our old extended AIML – now called Daden Chatbot Markup Language - DCML) can still provide access to it.

As the use of a Discourse based chatbot increases then there may be more possibility to “bootstrap” a machine-learning element to support the Chatscript system, and in fact we think that long-term a chatbot will need to support multiple approaches (including the much under-researched grammatical/semantic analysis) in order to provide the best responses. And that is an approach that Discourse can support giving the user a common interface to multiple approaches where needed, but otherwise enabling chatbots to be rapidly developed and easily maintained by using common models of database management and flow-chart editing.

If you'd like a demo of Discourse just get in touch.

MOD VLC Project gets go ahead for Phase 2



The Phase 2 trial of our Virtual Life Coach chatbot application to support military personnel with physical and mental health and wellbeing, and in managing the day-to-day frictions of military life has been given the go-ahead.

In a press release on the Gov.UK website MOD announced that our project was one of 7 sharing nearly £1m that is being invested to further develop and trial cutting-edge artificial intelligence, psychological, and neuroscience tools and technology in a bid to boost the training, wellbeing, and mental health support offered to personnel.

Minister for Defence People and Veterans Johnny Mercer said “We welcome this £1m investment from DASA aimed at improving the welfare of Armed Forces personnel. Our Armed Forces serve this country to an exceptional standard and help to keep us safe, so it's only right that they receive the best possible training and support.”

Chief of Defence People Lieutenant General Richard Nugee said: “Defence innovation is about more than just the kit our Armed Forces use. It's also about our men and women who serve our country. This £1m investment will see seven projects developed from improving training methods to boosting the pastoral care and mental health support we offer our people.”

We are also talking to several civilian organisations about use of the VLC.

Conversational Agents in Immersive Training

We've always felt that virtual characters are an essential part of immersive and virtual environments, as otherwise they can feel like ghost towns. Inter-personal interactions are so vital to almost every task that it's essential that they be replicated in immersive training and learning.

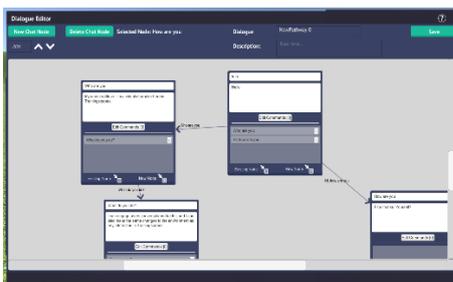
Back in the early Second Life days this was actually very easy. Everybody communicated by text chat, and so having an NPC avatar appear (by chatbot) in the text chat alongside everyone else in a scenario was just natural. And in SL a standard part of the UI made every character type in mid-air so you knew who was typing too!



With the move to more Unity style single-user training and learning scenarios this text-chat for users was no longer needed and reintroducing it just to speak to bots seemed odd (although possibly more familiar to game players with frequent NPC interactions). Instead the dominant model became one where chat options were overlaid on the screen by the virtual character, and the user just selected which they wanted to say. Whilst lacking the nuance of free chat, it is at least simple to use.



Pick-and-say chat interface



Pick-and-say authoring

This pick-and-say model is even more essential with the arrival of VR. In-VR keyboards are a complete pain, and speech recognition is still not 100% reliable, so pick-and-say is really the only way forward for now. So, whilst Trainingscapes already has a full chatbot interface, with v1.6.6 we introduced not just a dedicated pick-and-say user interface, but also a drag-and-drop pick-and-say (!) authoring interface. Previously you could code pick-and-say through Trainingscapes' ordinary multiple-choice model, but it looked pretty awful and wasn't too intuitive. The new approach makes it very quick and easy to author conversations – and chat acts like any Trainingscapes element in terms of being able to trigger any in-world action.

One thing that clients do still ask us about is voice. As mentioned, speech recognition input is still problematic, but it's getting there. For voice output you can pre-record the audio and include it in the pick-and-say authoring – but then you have to remember that if you change the text you also need to update the audio. We could do text-to-speech, but the voices are very limited, there are no regional or class accents, and there's no real inflection. And with both there is the issue of lip-syncing the avatar to what it says. So, whilst we'll keep working on audio chat options, for the short-term keeping to text-based pick-and-say may be the best and most flexible option.

If you'd like to see the new pick-and-say system in operation just contact us for a demo.

This Quarter we've also ...

- Updated our White Paper on Immersive Training and Learning – find it under Resources on our web site
- Let kids and parents try standing on Phobos to look at Mars, and standing on Io to look at Jupiter at the BIS West Midlands Space Day event in Worcester



- Demo'd VR training at the Disruption event in Birmingham and spoken on Digital Immortality at the BrumAI Meetup and at CogX!
- Delivered a seminar on the pedagogy, models and design decisions that support 3D immersive learning at the Open University
- Attended Connections2019 – the Kings College/MOD conference for professional wargamers – where interest in AR and VR is rising
- Been selected by Thales as one of their Digital Maritime Pioneers for our immersive visualisations of maritime data

Get in Touch!

If there is anything in this newsletter that has caught your interest and you'd like to discuss more just email info@daden.co.uk or call us on +44(0) 121 250 5678, or visit our website at www.daden.co.uk. We look forward to talking to you.

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