Allen Cypher's Portfolio November 2019

# Allen Cypher's Portfolio

Three delivered products Three 3-minute demos



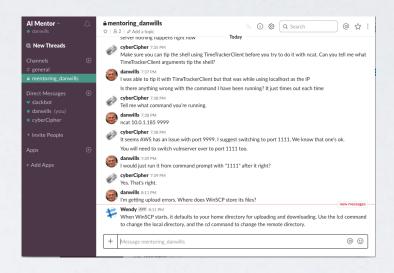
# Three interaction design examples

## Three delivered products

I Socratic Arts Automentor (2019) suggests answers for online mentors

2 Microsoft Azure ML Data Wrangler (2018) applies program synthesis to cleaning big data

3 IBM BigInsights Information Extractor (2016) creates text analytic miners for nonprogrammers



demo 1 👻								
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xandre Dumas	AD	Split – Merge Columns	24 July 1802	5 December 1870			277[2]	
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sh <mark>G</mark> oldish	MG	English	Unknown	Living	1989?		300+	Mostly books for schoolchildren
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arles Hamilton	CH	English	8 August 1876	24 December 1961	1894	1961	1200	Estimated to have written 100,
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ntiss <mark>]</mark> ngraham	P	English	28 December 1843	16 August 1904			1000+[19]	Wrote around 600 novels and
oki ]noue	R	Portuguese	22 July 1946	Living	1986		1000+	Brazilian surgeon turned pulp n

- Union 1 Education		1-4 Institution			Higher Educa	Dan_Jurafsky.txt
Education	History 2					Dan Jurafsky is Professor and Chair of Linguistics and Professor of Computer Science at Standard University He is the recipient of a 2002 MacArthur Fellowship, is the author with Jim Martin of the widely-used textbook "Spee and Language Processing", and co-created with Chris Manning one of the first massively open online courses, Stanford's course in Natural Language Processing. His trade book "The Language of Food: A Linguist Reads the Menu" just came out on September 15, 2014. Dan received a B.A in Linguistics in 1963 and a Ph.D. In
xtractor Prope elect an extract	rties or or structure and format your ou	utput into columns. Lea	m more.		General Settings Output	ut Computer Science in 1992 from the University of Californ Berkeley, was a positod 1992-1995 at the International Computer Science Institute, and was on the faculty of the
		4	Major -	Institution -		University of Colorado, Boulder until moving to Stanford
÷ •	Education History -	degree +	index -			2003.
φ. <u>τ</u>	Education History -	Span	Span	Span		His research ranges widely across computational linguis special interests include natural language understanding machine translation, spoken language and conversation,
tore	Span	Span	Span	Span	y 👻 Method: Contained Within 💌	His research ranges widely across computational linguis special interests include natural language understanding machine translation, spoken language and conversation relationship between human and machine processing, a the application of natural language processing to the soc and behavioral sciences. He also works on the linguistic

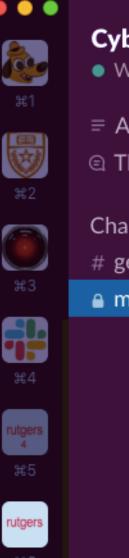
o × 2 : Three products Automentor

Socratic Arts Automentor

At Socratic Arts, students and mentors converse in the Slack app.

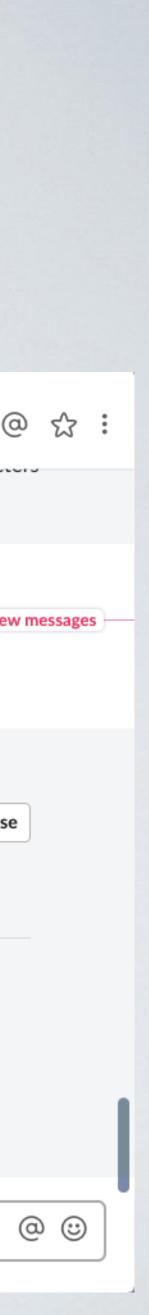
Automentor finds previous responses to similar student questions and suggests them to mentors, directly inside Slack.

A mentor can view alternative responses in the Wizard Responder:



+

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	3:10 PM a	nly visible to you <b>utomentor</b> APP Automentor recommends the respon Immunity to a process, one seems to way: (1) start the server first, (2) start the process. "	work better than the c	other. Please try it this	)S
		Task 8Step 1has 20 saved responses.Show the responses:herein WizardResponder	✓		
	+ Me	essage mentoring_dan_wills			



Three products Automentor

# Socratic Arts Automentor (continued)

In the Wizard Responder, the mentor can browse saved responses, and select and edit a response.

I conducted a needs assessment, designed the Wizard Responder and the Slack interface, and implemented the AI engine in lava and the interfaces in JavaScript and the Slack API.



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#### Your Res

#### Saved Res

#### response

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Three products Wrangler

# 2 Microsoft Azure ML Data Wrangler

I prototyped the UX for numerous "smart" features. For example:

A user can create a New Column byExample to extract the initials from the Name column. The user types JA in the first row, and the rest of the column is generated automatically. Colored highlighting indicates how the underlying algorithm determined the generated entries. The system can also Show Unsure Values, ...

👋 MLADS Demo	× /		
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errance Dicks	TD	Cluster	10
Darya Dontsova	DD	Hide Clusters	7 J
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Charles Carvice	CG	English	24
Meish Goldish	MG	English	Unl
Abu Hamid Al Ghazali	AG	Arabic	105
Charles Hamilton	CH	English	8 A
Muhammad Muhiyyudin Ibn	ul. <mark></mark> MA	Arabic	26 .
Prentiss Ingraham	PI	English	28
Ryoki Inoue	R	Portuguese	22 .



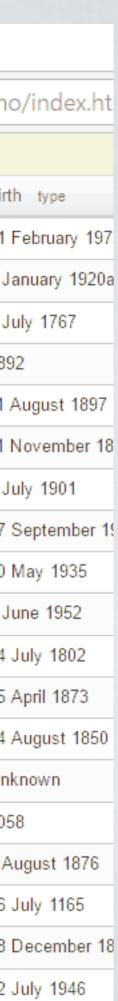
Three products Wrangler

# 2 Microsoft Azure ML Data Wrangler (continued)

... displaying reasonable alternative values, and the user can make a correction.

I implemented these features in javascript to create a working prototype. The product manager included the features in the product, and the development team implemented them in the shipping product.

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	calhost:1234	/Content/Mlads/html/fill	Dem
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Name type	Initials	Language type	Birt
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Isaac Asimov	IA	English	2 J
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Enid Blyton	ЕВ	alternatives:	11
Edwy S. Brooks	ES. B	UKUB	11
Barbara Cartland	BC		9 J
John Creasey	JC	English	17
Terrance Dicks	TD	English	10
Darya Dontsova	DD	Russian	7 J
Alexandre Dumas	AD	French	24
Howard R. Garis	HR. G	English	25
Charles Garvice	CG	English	24
Meish Goldish	MG	English	Un
Abu Hamid Al Ghazali	AB	Arabic	105
Charles Hamilton	сн	English	8 A
Muhammad Muhiyyudin Ibn ul	MU	Arabic	26
Prentiss Ingraham	PR	English	28
Ryoki Inoue	RY	Portuguese	22



Three products Extractor

# 3 IBM BigInsights Information Extractor

I designed the interface and interaction,

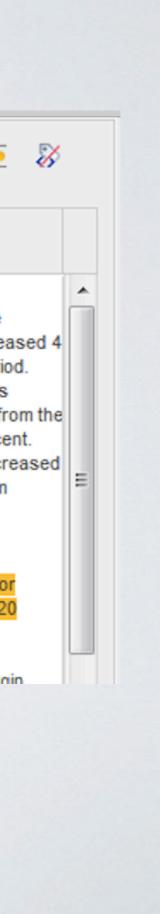
won a competition against an alternative design,

and joined the product team and implemented the design.

## An extractor created without programming. Matching text is highlighted and automatically extracted.

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fullyear						4Q2006.txt
Divisions and Revenues     RDM     revenue     1-2     toker		20 + Money				eased 6 percent. Revenues from the System p UNIX server products incre- percent compared with the 2005 peri Revenues from the System x servers increased 7 percent, and revenues fr System i servers decreased 10 percent Revenues from Microelectronics decre
Division 1-3	3 revenue 1-3 Is toke	30 + Money				6 percent and revenues from System Storage increased 9 percent. Global Financing segment revenues increased 3 percent (flat, adjusting for currency) in the fourth quarter to \$62
						million.

The company's total gross profit margin

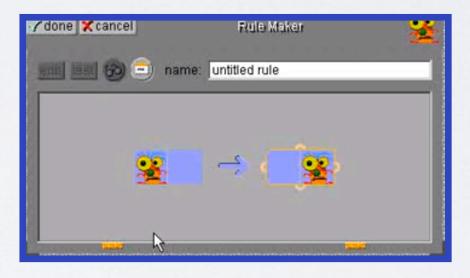


## Three 3-minute demos of innovative interaction design I CoScripter<sup>I</sup> (2007) humanreadable and computer-executable recording of user actions

2 Stagecast <sup>I</sup> (1995) a mouse-only visual programming language for creating simulations and interactive games

**3 Eager** (1991) one of the first intelligent agents. Introduced "anticipation highlighting" to show a user what a computer-generated program will do





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# Three interaction design examples

I Creating text miners wireframe scenario storyboard 2 Automating data entry mockup

3 Visual programming prototype

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Three examples Miners wireframe

# Creating text miners

## Wireframe for the main screen

Text Analytics uses text miners to recognize meaningful concepts such as street address, date, or price in ordinary text.

IBM had a tool that enabled programmers to create text miners using the AQL language.

I designed a new product to enable nonprogrammer subject matter experts such as business analysts — to create their own text miners.

created wireframes and detailed scenarios with storyboards.

### Task



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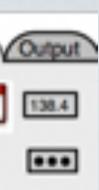
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rts 2006 Fourth-Quarter Results		Revenues from the Disbel Financing segment totaled \$520 million	
(, NY - 18 Jan 2007)			
muss of \$28.3 billion, up 7 percent as repor emirgs of \$2.26 per share from continuing o or 7 percent compared with the fourth-quart nt charge; signings of \$17.8 billion, up 55 percent.	operations, up 12 percent as		
thom the Software segment were \$5.6 bills s(justing for currency) compared with the to 5 middleware brands, which include Web3p us and Platonal products, were \$4.4 billion, 2005.	urth guarter of 2005. Revenues phere, Information Management,		
After the Olobal Financing segment totals lat, adjusting for currency). S&TO revenues I 5 percent compared with the year-ago per	from System z server products		
and Technology Group (58.70) segment re- for currency) in the fourth quarter to \$7.1 bit			
sany's total gross profit margin was 44.6 per 1 with 44.1 percent in the 2005 period.	roant in the 2006 fourth quarter		
mee and other income increased 11 percen period. SG&A expense increased 7 percen I 9 percent compared with the year-ago per	tt to \$5.6 billion. RO&E expense		
ctive tax rate in the fourth-quarter 2006 was the fourth quarter of 2005. The decrease in affect of several items in the quarter.			



Three examples Miners scenario

# Creating text miners (continued)

## Scenario for creating text miners

I created three scenarios and storyboards which were used for comparison with a competing design, and my design was chosen for the product.

I then joined the software group and wrote product code in javascript and Dojo to implement the design.

#### Group2 Tooling UI 'Quarterly Revenue' Manual Scenario

A financial analyst at <u>Schwab</u> wants to get quarterly revenue figures for IBM for the last 10 years. The analyst has available IBM's quarterly press releases which contain this information.

#### Input

Several "Quarterly Report" Text Documents. See the Resources section of the BigInsights Text Analytics <u>Toolings</u> (Group 2) Activity at https://w3connections.ibm.com/activities/service/html/ mainpage#activitypage,b805f83a-d4f7-412c-9a39-ef5a67791134

#### Output

For each document, the Year and Quarter of the document, and the revenue for each IBM Segment reported in the document.

#### **Detailed Scenario**

The user looks over the text in a few of the documents. She understands what the output should be, and believes that she could do the task by hand. She types "Collect quarterly revenue figures for every IBM segment" into the *task specification* textbox. The tooling does not produce any useful results automatically.

She decides to manually develop her extractor based on the document IBM Quarterly Report 4Q2006

at https://w3-connections.ibm.com/activities/service/download/forms/ 31713ec0-cf0e-4e21-97b7-3ae54589ad60/4Q2006.txt

#### Using a Prebuilt concept

•••

**Creating a new Dictionary** 

•••

#### **Creating new Phrase concepts**

•••

#### **Generalizing Phrases**

The user is now ready to construct generalized phrases to match the relevant occurrences of revenue.

#### a) To handle

• Revenues from the Software segment were \$5.6 billion she generalizes the phrase to

Revenues from the **segmentName** segment were **\$numberWithDecimal milBilTrillion** 

#### b) To handle

• Revenues from the Systems and Technology Group (S&TG) segment totaled \$7.1 billion she generalizes the phrase to

Revenues from the segmentName segment were/Totaled

#### \$numberWithDecimal milBilTrillion

where **were/Totaled** is a dictionary, and she adds "Systems and Technology Group (S&TG)" as a synonym of "Systems and Technology Group" in the **segmentName** dictionary She will probably also want to select the setting for this concept to ⊠ allow arbitrary whitespace

#### c) To handle

• segment revenues from Global Technology Services increased 7 percent (4 percent, adjusting for currency) to \$8.6 billion

She generalizes the phrase to:

segment revenues from **segmentName ... bigDollarAmount** where she has created a new concept called **bigDollarAmount** from the generalized phrase

#### \$numberWithDecimal milBilTrillion

where ... is a prefined concept that matches arbitrary text, with settable parameters.

Three examples Miners storyboard

# I Creating text miners (continued)

## I. Select an example phrase to generalize

Revenues from	$(\mathbf{i})$
phrase Revenues from the Software segment were \$5.6 billion	
example Revenues from the Software segment were \$5.6 billion	
result	

## 2. Generalize 5.6 to Number

Revenues from		$(\mathbf{i})$
phrase Revenues from the software segment were \$	5.6 billion	
example Revenues from the software segment were S		
	New Phrase Number	

## 3. The generalization is inserted

Revenues from		$(\mathbf{i})$
Phrase Revenues from the software segment were \$	number	billion
example Revenues from the software segment were \$	5.6	billion
result		

**Storyboard** for the Generalizing Phrases section of the above Scenario Excerpts show the user creating a Big Dollar Amount extractor, to match text similar to \$17.2 million

## 4. Continue generalizing to get Big Dollar Amount Phrase

Revenues from					$\overline{0}$
phrase Revenues from the	Segment Name	segment	were/totaled	Big Dollar Amount	
example Revenues from the	Software	segment	were	\$5.6 billion	
result					

5. The user now runs the generalization on a new document, and the phrase Revenues from the Global Financing segment totaled \$620 million is matched

Revenues from				<u>(</u> )
phrase Revenues from the	Segment Name Global Financing segmen	nt totaled	Big Dollar Amount \$620 million	
example Revenues from the	Software segmen	nt were	\$5.6 billion	
result Revenues from the	Global Financing segme	ent totaled	\$620 million	



Three examples Data entry mockup

# 2 Automating data entry

There are workers at IBM whose job is to enter spreadsheet data into web forms.

I conducted interviews to assess their needs, and then

implemented CoScripter Tables, which is based on my earlier CoScripter product.

Workers enter one row, and the tool automatically enters all of the other rows.

## Mockup

Recorded script,	Web for	m,	
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CoScripter: ISM update (published)       Image: Coscripter: ISM update (published)         Image: Step Run Stop Record Save       Image: Coscripter Step Run Stop Record Save         Click Step or Run to execute script       Image: Coscripter Step Run Stop Record Save         ISI update       Image: Coscripter Step Run Stop Record Save	Assets Assets Find: List Asset Asset Asset Associated Assets		In Reports ♠ Start <u>C</u> enter ▲ Profile 2   ♦ ♦   ३   मिल कि 1 ations
<ul> <li>* repeat</li> <li>* enter the cell in the "ASSETTAG" column of row 2 of the scratchtable into the "Asset Tag" textbox</li> <li>* enter the cell in the "ITEMNUM" column of row 2 of the scratchtable into the "Rotating Item" textbox</li> <li>* click the "Change Status" button</li> <li>* click the "New Status" button</li> <li>* click the link that equals the cell in the "STATUS" column of row 2 of the scratchtable</li> <li>* click the "OK" button</li> </ul>	Asset J264 Asset Tag T41522 Status 120 Active	Asset J26490 Status 120 Active Operating - Asset in	Active Operation  Active Operation  Status  Decommissioned for Disposal Decommissioned - Lost Decommissioned - Stolen Decommissioned - Released Decommissioned Not Ready - Placed on Order Not Ready - Captured in Transition Not Ready - Accepted Not Ready Operating - Idle ACTIVE INACTIVE INACTIVE Operating
Table       New Assets     Import     Save       Import     Save       Import     Save       Import     Save       Import     Save       Import     Save	5 6 ALNUM LOCATION ITEMNUM	7 8 9 STATUS MANUFACTURER WARRANT	▲ S 10 + YEX Long Description
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Three examples Visual Programming 3 Visual Programming

As part of Alan Kay's project to fulfill his Dynabook vision,

co-invented a visual programming environment that

- enabled 10 year olds to create their own interactive video games for the web, and
- learn the concepts of object-oriented programming in the process.

created multiple approaches for the interaction design,

and we jointly conducted numerous user studies and

implemented a prototype.

## **Prototype** for rule creation window

