Considering Accuracy

Sentiment Analysis in Online/MOOC learning

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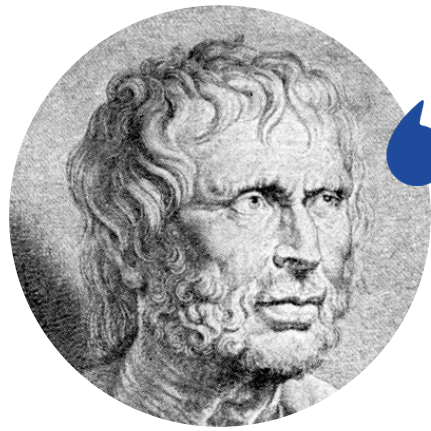
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If one does not know to which port one is sailing, no wind is favorable 🔹🔹

Seneca

What is Emotion?

Our beliefs determine how we measure accuracy

Basic

Pragmatic Action

Social Reality

"discrete, have a fixed set of neural and bodily expressed components, and a fixed feeling or motivational component"

(Tracy & Randles, 2011)

"transformations in a physical or social space to advance toward a certain goal state"

(Wilutzky, 2015)

"To create emotions (…), there must be a group of people who agree that certain instances (…) serve particular functions"

(Barrett, 2012)

Examining Studies

Text	Study	Basic	Pragmatic	Social	None
Diaries	(Munezero et al., 2013)	-	-	-	✔
Evaluations	(Jagtap & Dhotre, 2014)	-	-	-	✔
	(R. A. Calvo & Kim, 2010)	-	-	✔	-
	(Rajput et al., 2016)	✔	-	✔	-
Facebook	(Ortigosa et al., 2014)	✔	-	-	-
	(Troussas, Virvou, Espinosa, Llaguno, & Caro, 2013)	✔	-	-	-
Forum	(Chaplot et al., 2015)	-	✔	-	-
	(S. Crossley, Paquette, et al., 2016)	-	✔	-	-
	(Wen et al., 2014)	-	✔	-	-
	(Hillaire, Rienties, et al., 2018)	✔	✔	-	-
	(Wyner, Shaw, Kim, Li, & Kim, 2008)	-	✔	-	-
	(Shapiro et al., 2017)	-	-	-	✔
	(Chang, Maheswaran, Kim, & Zhu, 2013)	-	-	-	✔
	(Kagklis, Karatrantou, Tantoula, Panagiotakopoulos, & Verykios, 2015)	-	-	-	✔
Self-Report	(Santos et al., 2013)	✔	-	✔	-
		5/15	**5/15**	**3/15**	**5/15**

Basic Emotion

Who can identify emotion?

Studies where people from outside study context identify emotion

Study	Rater
(Rajput et al., 2016)	Researcher
(Ortigosa et al., 2014)	Researcher
(Troussas, Virvou, Espinosa, Llaguno, & Caro, 2013)	Researcher
(Hillaire, Rienties, et al., 2018)	13 naïve raters
(Santos et al., 2013)	1 expert rater

Pragmatic Action

What is predicted by emotion?

Studies that evaluate sentiment by predictive power

Study	Outcome
(Chaplot et al., 2015)	Retention
(S. Crossley, Paquette, et al., 2016)	Retention
(Wen et al., 2014)	Retention
(Hillaire, Rienties, et al., 2018)	Reading Comprehension
(Wyner, Shaw, Kim, Li, & Kim, 2008)	Getting an Answer

Getting student perspectives

Evaluating accuracy from the perspective of participants in the context

Study	Student
(R. A. Calvo & Kim, 2010)	Evaluations
(Rajput et al., 2016)	Evaluations
(Santos et al., 2013)	Self-Report Emotion

Proposed Method

Social Reality

Student Sourced Classifier

Crowd Source Labels from Students to Train Classifiers

Labels

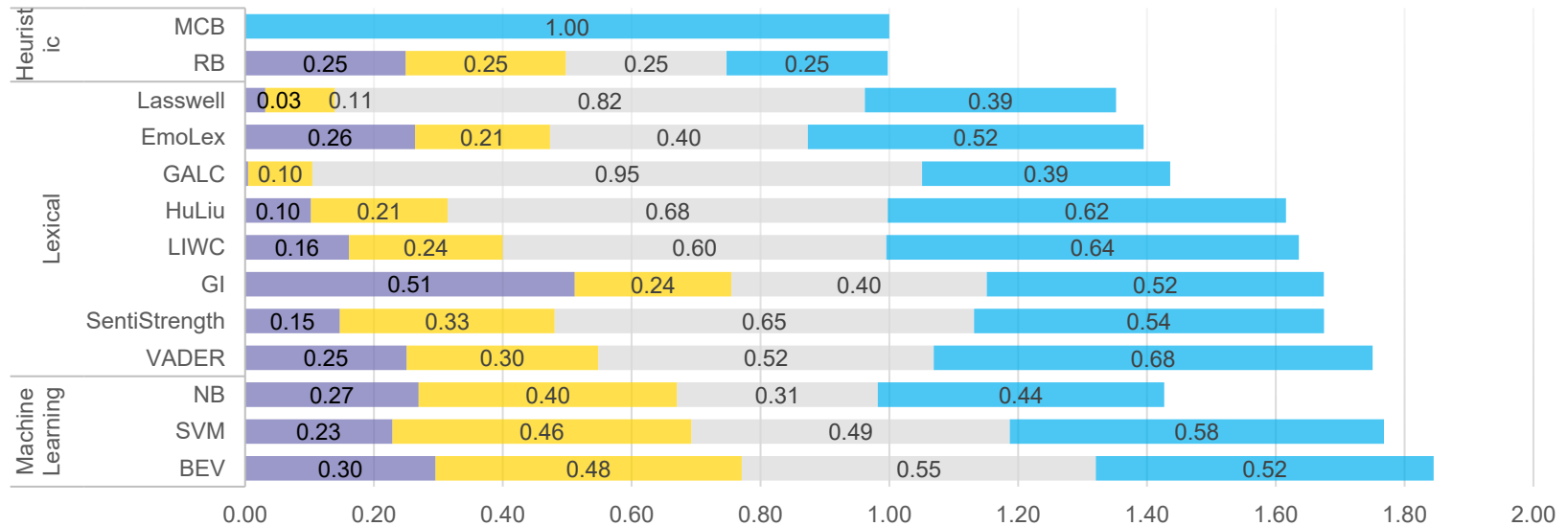- Students Provide Labelled Data

Interpret Social Reality

- Normative Paradigm
- Multivariate Paradigm

Train Classifier

- BEV
- Naïve Bayes
- SVM

Benchmarking BEV

Initial Findings

	Machine Learning			Lexical								Heuristic	
	BEV	SVM	NB	VADER	SentiStrength	GI	LIWC	HuLiu	GALC	EmoLex	Lasswell	RB	MCB
■ Mixed	0.30	0.23	0.27	0.25	0.15	0.51	0.16	0.10	0.00	0.26	0.03	0.25	0.00
■ Negative	0.48	0.46	0.40	0.30	0.33	0.24	0.24	0.21	0.10	0.21	0.11	0.25	0.00
■ Neutral	0.55	0.49	0.31	0.52	0.65	0.40	0.60	0.68	0.95	0.40	0.82	0.25	0.00
■ Positive	0.52	0.58	0.44	0.68	0.54	0.52	0.64	0.62	0.39	0.52	0.39	0.25	1.00

Questions? Feelings?

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http://bit.ly/1S2ItVD

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