ArAIEval Shared Task:
Persuasion Techniques and Disinformation Detection in Arabic Text

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https://araieval.gitlab.io/

ArAIEval
Arabic AI Tasks Evaluation (ArAIEval)

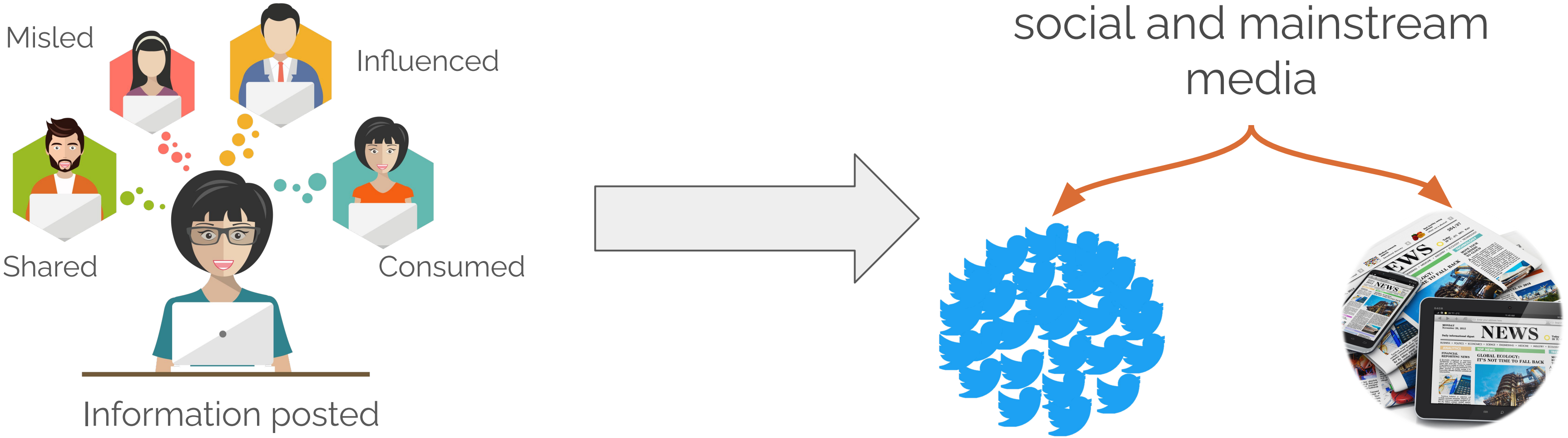
Arabic NLP 2023

EMNLP 2023

Tasks

Task 1: Persuasion Technique Detection

Task 2: Disinformation Detection



Task 1: Persuasion Technique Detection

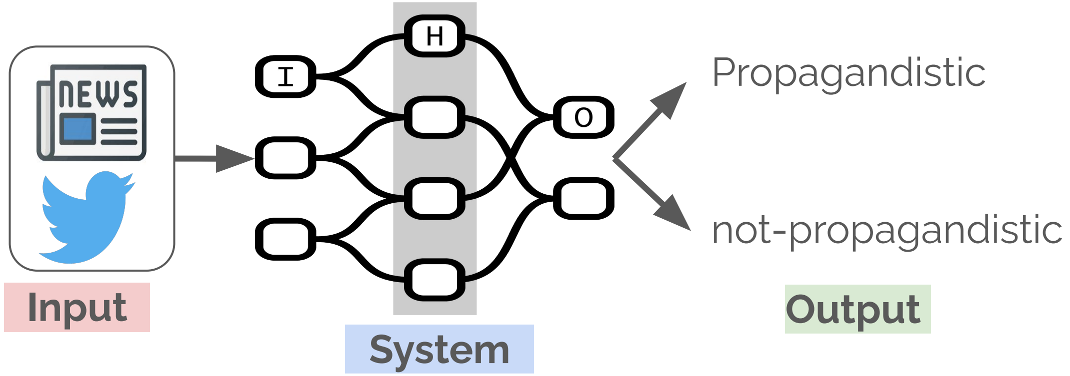
Communication that **deliberately** misrepresent symbols, appealing to emotions and prejudices and bypassing rational thought, to **influence** its audience **towards a specific goal***

Smears

*definition re-elaborated from *Institute for Propaganda Analysis (Ed.). (1938). How to Detect Propaganda. In Propaganda Analysis. Volume I of the Publications of the Institute for Propaganda Analysis (pp. 210–218).*

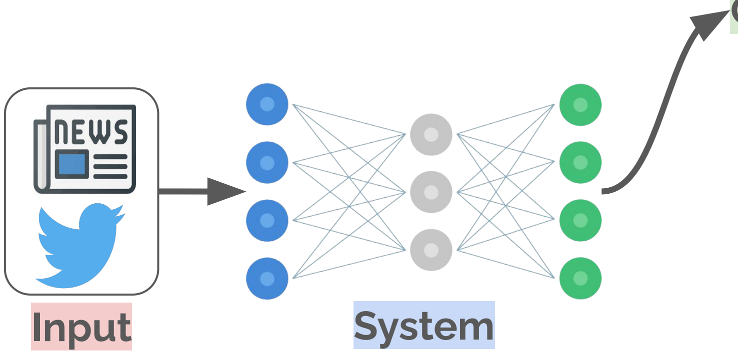
Task 1: Persuasion Technique Detection

Subtask A: Given a multigenre (tweet and news paragraphs of the news articles) snippet, identify whether it contains content with persuasion technique. This is a **binary classification task**.

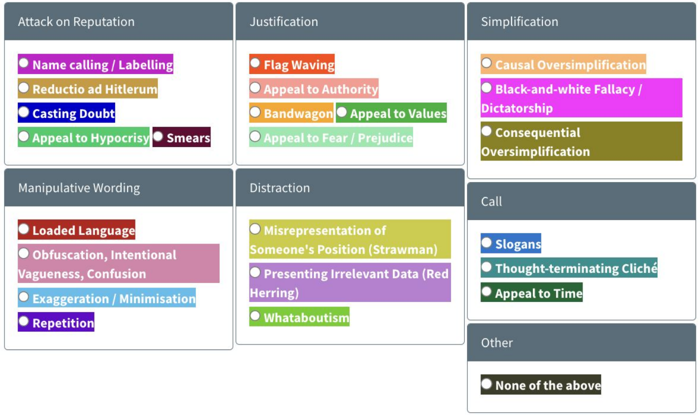


Task 1: Persuasion Technique Detection

Subtask B: Given a multigenre (tweet and news paragraphs of the news articles) snippet, identify the propaganda techniques used in it. This is a **multilabel classification task**.



Output: Zero or more of the 23 techniques



Dataset

Data Collection:

- **Tweets** collected from different accounts of Arabic news sources (Alam et al., 2022b)
- **News paragraphs** selected from news articles (Hasanain et al. 2023)
  a. AraFacts (Ali et al., 2021)
  b. in-house news articles collection

Dataset: Annotation

23 Techniques

Attack on Reputation

- Name calling / Labelling
- Reductio ad Hitlerum
- Casting Doubt
- Appeal to Hypocrisy
- Smears

Justification

- Flag Waving
- Appeal to Authority
- Bandwagon
- Appeal to Values
- Appeal to Fear / Prejudice

Simplification

- Causal Oversimplification
- Black-and-white Fallacy / Dictatorship
- Consequential Oversimplification

Manipulative Wording

- Loaded Language
- Obfuscation, Intentional Vagueness, Confusion
- Exaggeration / Minimisation
- Repetition

Distraction

- Misrepresentation of Someone's Position (Strawman)
- Presenting Irrelevant Data (Red Herring)
- Whataboutism

Call

- Slogans
- Thought-terminating Cliché
- Appeal to Time

Other

- None of the above

Dataset: Annotation

- **Phase 1:** Individual annotators annotate the dataset
- **Phase 2:** Consolidation is done with expert annotators to resolve the disagreement and ensure quality

Dataset: Statistics

Subtask A

	Train	Dev	Test
true	1918 (79%)	202 (78%)	331 (66%)
false	509 (21%)	57 (22%)	172 (34%)
Total	**2427**	**259**	**503**

Total: 3,189

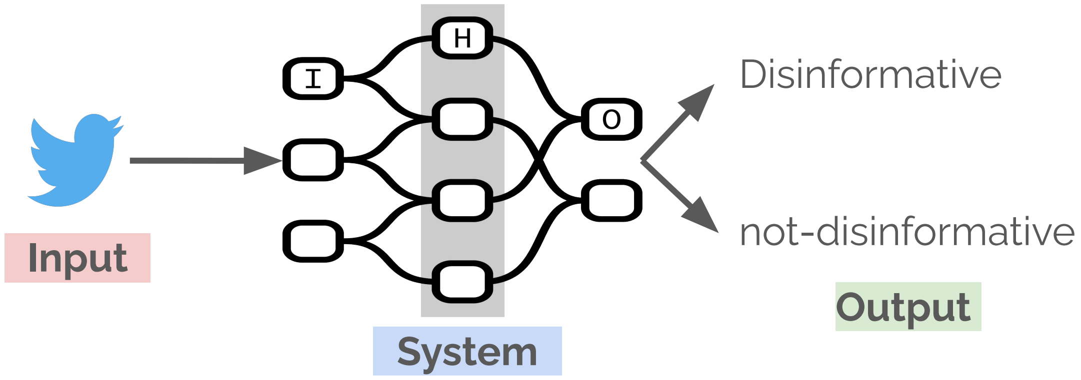
Subtask B

Persuasion Technique	**Train (2427)**	**Dev (259)**	**Test (503)**
Loaded Language	1574	176	253
Name Calling or Labelling	692	77	133
Questioning the Reputation	383	43	89
Exaggeration or Minimisation	292	33	40
Obfuscation, Intentional Vagueness, Confusion	240	28	25
Casting Doubt	143	16	21
Causal Oversimplification	128	15	12
Appeal to Fear, Prejudice	108	12	15
Slogans	70	8	25
Flag Waving	63	7	25
Appeal to Hypocrisy	56	7	17
Appeal to Values	37	4	29
Appeal to Authority	48	5	14
False Dilemma or No Choice	32	3	6
Consequential Oversimplification	33	3	3
Conversation Killer	28	3	7
Repetition	25	3	6
Guilt by Association	13	1	1
Appeal to Time	10	2	2
Whataboutism	9	1	2
Red Herring	8	1	3
Strawman	6	1	2
Appeal to Popularity	2	1	1
No Technique	*509*	*57*	*172*
Total	**4509**	**507**	**903**

Total: 5,919

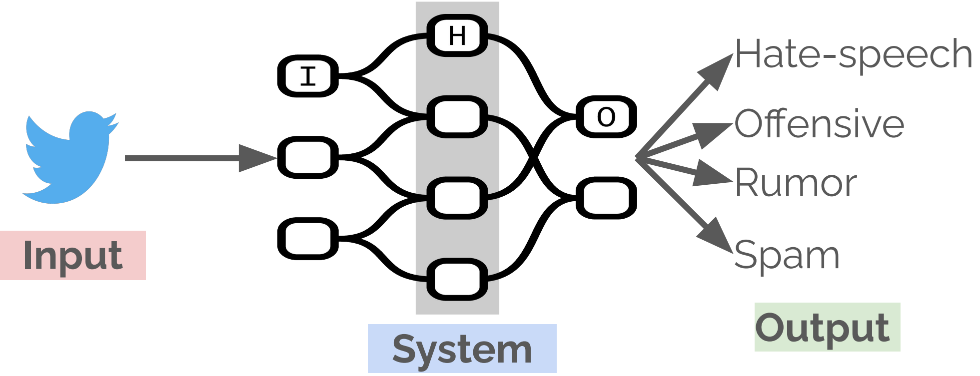
Task 2: Disinformation Detection

Subtask 2A: Given a tweet, categorize whether it is disinformative. This is a **binary classification task**.



Task 2: Disinformation Detection

Subtask 2B: Given a tweet, detect the fine-grained disinformation class, if any. This is a **multiclass classification task.** The fine-grained labels include hate-speech, offensive, rumor, and spam.



Dataset

- **Arabic tweets** collected in February & March 2020 using keyword Corona
- Selected tweets that were deleted after posting
- Manually annotated **22K** deleted and non-deleted tweets with different categories

Class	Example
HS*	أنا مؤمن تماماً أن الصينيين سبب تفشي أمراض مثل سارس و كورونا I strongly believe that the Chinese caused the outbreak of diseases such as SARS and Corona
Off*	لسانها اوصخ من كورونا Her tongue is dirtier than Corona
Rumor	دواء الملاريا هو الذي يعالج كورونا بنسبة 100% Malaria medicine cures Corona with 100% efficiency
Spam	#كورونا #شركة تنظيف مكيفات #شركة نقل أثاث Furniture moving company, air conditioning cleaning company #Coronavirus
Not-disinfo	مع تفشي فايروس كورونا نسأل الله أن يحفظ بلادنا With the outbreak of the Corona virus, we ask God to protect our country

Dataset: Statistics

Subtask A

	Train	Dev	Test
Disinfo	2656 (19%)	397 (19%)	876 (23%)
Not-disinfo	11491 (81%)	1718 (81%)	2853 (77%)
Total	**14147**	**2115**	**3729**

Subtask B

	Train	Dev	Test
HS	1512 (57%)	226 (57%)	442 (50%)
Off	500 (19%)	75 (19%)	160 (18%)
Rumor	191 (7%)	28 (7%)	33 (4%)
Spam	453 (17%)	68 (17%)	241 (28%)
Total	**2656**	**397**	**876**

Evaluation Setup

- **Development phase:** released train and development subsets, and participants submitted runs on the **development set**
- **Test phase:** participants submitted run on the official **test subset**
- **Official measure:** Micro F1

Participation

- **Total (test phase): 20 teams**
  - **Task 1:** 14 teams
  - **Task 2:** 16 teams
  - 16 teams submitted system description papers

Approaches

- The most commonly used model was AraBERT, MARBERT, ARBERT, and QARiB.
- Ensembles, data augmentation, and preprocessing

Results: Task 1

	Team	Micro F1	Macro F1		Team	Micro F1	Macro F1
	Subtask 1A				**Subtask 1B**		
1	HTE	0.7634	0.7321	1	UL & UM6P	0.5666	0.2156
2	KnowTellConvince	0.7575	0.7282	2	rematchka	0.5658	0.2497
3	rematchka	0.7555	0.7309	3	AAST-NLP	0.5522	0.1425
4	UL & UM6P	0.7515	0.7186	4	Itri Amigos	0.5506	0.1839
5	Itri Amigos	0.7495	0.7225	5	HTE	0.5412	0.0979
6	Raphael	0.7475	0.7221	6	Raphael	0.5347	0.1772
7	Frank	0.7455	0.7173	7	ReDASPersuasion	0.4523	0.0568
8	Mavericks	0.7416	0.7031	8	*Baseline (Majority)*	0.3599	0.0279
9	Nexus	0.7396	0.6929	9	*Baseline (Random)*	0.0868	0.0584
10	superMario	0.7316	0.7098	10	pakapro	0.0854	0.0563
11	AAST-NLP	0.7237	0.6693				
12	*Baseline (Majority)*	0.6581	0.3969				
13	ReDASPersuasion	0.6581	0.3969				
14	Legend	0.6402	0.4647				
15	pakapro	0.5030	0.4940				
16	*Baseline (Random)*	0.4771	0.4598				

Results: Task 2

	Team	Micro F1	Macro F1		Team	Micro F1	Macro F1
	Subtask 2A				**Subtask 2B**		
1	DetectiveRedasers	0.9048	0.8626	1	DetectiveRedasers	0.8356	0.7541
2	AAST-NLP	0.9043	0.8634	2	UL & UM6P	0.8333	0.7388
3	UL & UM6P	0.9040	0.8645	3	AAST-NLP	0.8253	0.7283
4	rematchka	0.9040	0.8614	4	rematchka	0.8219	0.7156
5	PD-AR	0.9021	0.8595	5	superMario	0.8208	0.7031
6	superMario	0.9019	0.8625	6	PD-AR	0.8174	0.7209
7	Mavericks	0.9010	0.8606	7	Itri Amigos	0.8139	0.7220
8	Itri Amigos	0.8984	0.8468	8	KnowTellConvince	0.8071	0.6888
9	KnowTellConvince	0.8938	0.8460	9	USTHB	0.5046	0.1677
10	Nexus	0.8935	0.8459	10	*Baseline (Majority)*	0.5046	0.1677
11	PTUK-HULAT	0.8675	0.7992	11	Ankit	0.4167	0.1993
12	Frank	0.8163	0.6378	12	*Baseline (Random)*	0.2603	0.2243
13	USTHB	0.7670	0.4418	13	pakapro	0.2317	0.1978
14	*Baseline (Majority)*	0.7651	0.4335				
15	AraDetector	0.7487	0.6498				
16	*Baseline (Random)*	0.5154	0.4764				
17	pakapro	0.4996	0.4596				

Findings

- **Task 1 (Persuasion Technique Detection):**
  - Several participating systems showed the positive impact of exploring loss functions other than the typical Cross Entropy loss.

- **Task 2 (Disinformation Detection):**
  - We observe the systems achieved significantly high performance even in the fine-grained Subtask 2B.

Summary and Future Work

Summary

- Extended propaganda detection task with multigenre dataset (tweets + news articles)
- Disinformation detection task
- Challenges due to the skewed label distribution
- Most systems fine-tuned transformer models, used data augmentation and standard pre-processing

Future work

- Extend to multimodality of the problems
- Offer span level detection tasks

Acknowledgments

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Thank you!

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