

A Error Analysis

We compare the logical form error on the test set between the “Sum loss” model (Wang et al., 2017) and the proposed “Meta + Sum loss” model. We show some examples for the two cases below.

A.1 Meta + Sum loss is correct and Sum loss is incorrect

Example 1:

- Table: 2-17982145-1, Header: [benalla dfl, wins, losses, draws, byes, against]
- Question: when benall dfl is benalla dfl goorambat with less than 13 wins , what is the least amount of losses ?
- Ground Truth: SELECT MIN(losses) FROM 2-17982145-1 WHERE benalla dfl = goorambat AND wins < 13
- Prediction (Sum loss): SELECT MIN(losses) FROM 2-17982145-1 WHERE wins = goorambat AND wins < 13
- Support 1 Table: 2-15582870-3, Header: [week, date, time (cst), opponent, result, game site, record, nfl recap]
- Support 1 Question: what is the lowest week that has 7:15 p.m. as the time (cst) and fedexfield as the game site ?
- Support 1 Ground Truth: SELECT MIN(week) FROM 2-15582870-3 WHERE time (cst) = 7:15 p.m. AND game site = fedexfield
- Support 2 Table: 2-15389424-1, Header: [position, team, points, played, drawn, lost, against, difference]
- Support 2 Question: what is the lowest number of played of the team with 18 points and a position greater than 5 ?
- Support 2 Ground Truth: SELECT MIN(played) FROM 2-15389424-1 WHERE points = 18 AND position > 5
- Prediction (Meta + Sum loss): SELECT MIN(losses) FROM 2-17982145-1 WHERE benalla dfl = goorambat AND wins < 13

Example 2:

- Table: 2-12207717-4, Header: [date, opponent, score, loss, record]
- Question: what was the loss of the game against the opponent angels with a 26-30 record ?
- Ground Truth: SELECT loss FROM 2-12207717-4 WHERE opponent = angels AND record = 26-30
- Prediction (Sum loss): SELECT loss FROM 2-12207717-4 WHERE opponent = 26-30
- Support 1 Table: 2-12475284-6, Header: [place, player, country, score, to par]
- Support 1 Question: what is the to par of the player from the country united states with a t5 place ?
- Support 1 Ground Truth: SELECT to par FROM 2-12475284-6 WHERE country = united states AND place = t5
- Support 2 Table: 2-17430107-2, Header: [res., record, opponent, method, event, round, location]

- Support 2 Question: what was the result of the fight when tetsuji kato 's record was 19-9 ?
- Support 2 Ground Truth: SELECT res. FROM 2-17430107-2 WHERE record = 19-9
- Prediction (Meta + Sum loss): SELECT loss FROM 2-12207717-4 WHERE opponent = angels AND record = 26-30

Example 3:

- Table: 1-26223231-1, Header: [season, series, team, races, wins, poles, f/laps, podiums, points, position]
- Question: when there are 2 wins , how many poles are ?
- Ground Truth: SELECT poles FROM 1-26223231-1 WHERE wins = 2
- Prediction (Sum loss): SELECT COUNT(poles) FROM 1-26223231-1 WHERE wins = 2
- Support 1 Table: 2-16353025-1, Header: [week, date, opponent, result, tv time]
- Support 1 Question: november 25, 2001 was what week of the season ?
- Support 1 Ground Truth: SELECT COUNT(week) FROM 2-16353025-1 WHERE date = november 25, 2001
- Support 2 Table: 1-23285805-5, Header: [game, date, team, score, high points, high rebounds, high assists, location attendance, record]
- Support 2 Question: name the number of record for 30 game
- Support 2 Ground Truth: SELECT COUNT(record) FROM 1-23285805-5 WHERE game = 30
- Prediction (Meta + Sum loss): SELECT poles FROM 1-26223231-1 WHERE wins = 2

A.2 Meta + Sum loss is incorrect and Sum loss is correct

Example 4:

- Table: 1-22546460-4 , Header: [best male mc, best female mc, best male artist, best female artist, best male lyricist, best female lyricist, best male record]
- Question: who won the best female artist where best r&b contributor won the best male lyricist ?
- Ground Truth: SELECT best female artist FROM 1-22546460-4 WHERE best male lyricist = best r&b contributor
- Prediction (Sum loss): SELECT best female artist FROM 1-22546460-4 WHERE best male lyricist = best r&b contributor
- Support 1 Table: 2-13663314-1, Header: [week, date, opponent, result, tv time]
- Support 1 Question: november 25, 2001 was what week of the season ?
- Support 1 Ground Truth: SELECT COUNT(week) FROM 2-13663314-1 WHERE date = november 25, 2001
- Support 2 Table: 2-15122771-1, Header: [round, pick, player, position, school/club team]
- Support 2 Question: what is round 1 's position ?
- Support 2 Ground Truth: SELECT position FROM 2-15122771-1 WHERE round = 1
- Prediction (Meta + Sum loss): SELECT best female artist FROM 1-22546460-4 WHERE best male lyricist = best male lyricist

Example 5:

- Table: 2-1014145-1 , Header: [pick #, mls team, player, position, affiliation]
- Question: tell me the lowest pick number for columbus crew
- Ground Truth: `SELECT MIN(pick #) FROM 2-1014145-1 WHERE mls team = columbus crew`
- Prediction (Sum loss): `SELECT MIN(pick #) FROM 2-1014145-1 WHERE mls team = columbus crew`
- Support 1 Table: 1-184334-2, Header: [district, s barangay, population (2010 census), area (has .), pop. density (per km2)]
- Support 1 Question: what is the population (2010 census) if the area is area (has .) 66.11 ?
- Support 1 Ground Truth: `SELECT MIN(population (2010 census)) FROM 1-184334-2 WHERE area (has .) = 66.11`
- Support 2 Table: 1-22402438-7, Header: [pick #, player, position, nationality, nhl team, college/junior/club team]
- Support 2 Question: how many pick # are there for the goaltender position ?
- Support 2 Ground Truth: `SELECT MIN(pick #) FROM 1-22402438-7 WHERE position = goaltender`
- Prediction (Meta + Sum loss): `SELECT MIN(pick #) FROM 2-1014145-1 WHERE pick # = columbus crew`

Example 6:

- Table: 2-18391739-1 , Header: [year, stage, start of stage, distance (km), category of climb, stage winner, yellow jersey]

- Question: what is the distance for stage winner josé-manuel fuente when the stage was less than 16 ?
- Ground Truth: `SELECT distance (km) FROM 2-18391739-1 WHERE stage < 16 AND stage winner = josé-manuel fuente`
- Prediction (Sum loss): `SELECT distance (km) FROM 2-18391739-1 WHERE stage < 16 AND stage winner = josé-manuel fuente`
- Support 1 Table: 2-1676921-5 , Header: [date, tournament, surface, partner, opponents in final, score in final]
- Support 1 Question: is the opponents in final in the match with a score in final of 4–6, 1–6 played on clay surface ?
- Support 1 Ground Truth: `SELECT opponents in final FROM 2-1676921-5 WHERE score in final = 4–6, 1–6 AND surface = clay`
- Support 2 Table: 1-170958-2, Header: [official name, status, area km 2, population, census ranking]
- Support 2 Question: what is the land area of official name hopewell parish in km2 ?
- Support 2 Ground Truth: `SELECT area km 2 FROM 1-170958-2 WHERE official name = hopewell`
- Prediction (Meta + Sum loss): `SELECT distance (km) FROM 2-18391739-1 WHERE stage winner = josé-manuel fuente AND stage < 16`