CS5560 Knowledge Discovery and Management

Problem Set (PS-1B)

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CHICAGO (AP) — Citing high fuel prices, United Airlines said Friday it has increased fares by $6 per round trip on flights to some cities also served by lower-cost carriers. American Airlines, a unit AMR, immediately matched the move, spokesman Tim Wagner said. United, a unit of UAL, said the increase took effect Thursday night and applies to most routes where it competes against discount carriers, such as Chicago to Dallas and Atlanta and Denver to San Francisco, Los Angeles and New York.

1. Given the text example below, show the following NLP operations.
   1. Sentence detection/Tokenization

[Citing] [high] [fuel] [prices] [United Airlines] [said] [Friday] [it] [has] [increased] [fares] [by] [$6] [per] [round] [trip] [on] [flights] [to] [some] [cities] [also] [served] [by] [lower] [cost] [carriers] [American Airlines] [a] [unit] [AMR] [immediately] [matched] [the] [move] [spokesman] [Tim Wagner] [said] [United] [a] [unit] [of] [UAL] [said] [the] [increase] [took] [effect] [Thursday] [night] [and] [applies] [to] [most] [routes] [where] [it] [competes] [against] [discount] [carriers] [such] [as] [Chicago] [to] [Dallas] [and] [Atlanta] [and] [Denver] [to] [San Francisco] [Los Angeles] [and] [New York]

* 1. Lemmatization

[Citing] [high] [fuel] [price] [United Airlines] [say] [Friday] [it] [has] [increase] [fare] [by] [$6] [per] [round] [trip] [on] [flight] [to] [some] [city] [also] [serve] [by] [low] [cost] [carrier] [American Airlines] [a] [unit] [AMR] [immediate] [match] [the] [move] [spokesman] [Tim Wagner] [say] [United] [a] [unit] [of] [UAL] [say] [the] [increase] [take] [effect] [Thursday] [night] [and] [apply] [to] [most] [route] [where] [it] [compete] [against] [discount] [carrier] [such] [as] [Chicago] [to] [Dallas] [and] [Atlanta] [and] [Denver] [to] [San Francisco] [Los Angeles] [and] [New York]

* 1. POS tagging/Chunking

[Citing - JJR] [high - JJ] [fuel - NN] [price - NN] [United Airlines - NN] [say - VB] [Friday - NN] [it - IN] [has - IN] [increase - NN] [fare - NN] [by - IN] [$6 - NN] [per - IN] [round - VB] [trip - NN] [on - IN] [flight - NN] [to - IN] [some - VB] [city - NN] [also - CC] [serve - VB] [by - IN] [low - JJR] [cost - VB] [carrier - NN] [American Airlines - NN] [a - IN] [unit - NN] [AMR - NN] [immediate - JJ] [match - VB] [the - IN] [move - VB] [spokesman - NN] [Tim Wagner - NN] [say - VB] [United - NN] [a - IN] [unit - NN] [of - IN] [UAL - NN] [say - VB] [the - IN] [increase - JJ] [take - VB] [effect - VB] [Thursday - NN] [night - NN] [and - IN] [apply - VB] [to – IN] [most - JJ] [route - NN] [where - WDT] [it - IN] [compete - VB] [against - JJ] [discount - NN] [carrier - NN] [such - JJ] [as - IN] [Chicago - NN] [to - IN] [Dallas - NN] [and - IN] [Atlanta - NN] [and - IN] [Denver - NN] [to - IN] [San Francisco - NN] [Los Angeles - NN] [and - IN] [New York - NN]

* 1. Parsing

[Citing] [high] [fuel] [prices] - [United Airlines] [said] [Friday] - [it] [has] [increased] [fares]

[American Airlines] - [a] [unit] [AMR] - [immediately] [matched] [the] [move] -[spokesman] [Tim Wagner] [said]

[United] [a] [unit] [of] [UAL] - [said] [the] [increase] [took] [effect] [Thursday] [night]

[Chicago] - [to] [Dallas] - [and] [Atlanta]

[Denver] - [to] [San Francisco] - [and] [Los Angeles] - [and] [New York]

* 1. Name Entity Recognition

[Citing - MISC] [high - MISC] [fuel - MISC] [price - MISC] [United Airlines - ORG] [say - MISC] [Friday - DAY] [it - MISC] [has - MISC] [increase - MISC] [fare - MISC] [by - MISC] [$6 - MONEY] [per - MISC] [round - MISC] [trip - MISC] [on - MISC] [flight - MISC] [to - MISC] [some - MISC] [city - MISC] [also - MISC] [serve - MISC] [by - MISC] [low - MISC] [cost - MISC] [carrier - MISC] [American Airlines - ORG] [a - MISC] [unit - MISC] [AMR - ORG] [immediate - MISC] [match - MISC] [the - MISC] [move - MISC] [spokesman - MISC] [Tim Wagner - PERSON] [say - MISC] [United - ORG] [a - MISC] [unit - MISC] [of - MISC] [UAL - ORG] [say - MISC] [the - MISC] [increase - MISC] [take - MISC] [effect - MISC] [Thursday - DAY] [night - MISC] [and - MISC] [apply - MISC] [to - MISC] [most - MISC] [route - MISC] [where - MISC] [it - MISC] [compete - MISC] [against - MISC] [discount - MISC] [carrier - MISC] [such - MISC] [as - MISC] [Chicago - LOCATION] [to - MISC] [Dallas - LOCATION] [and - MISC] [Atlanta - LOCATION] [and - MISC] [Denver - LOCATION] [to - MISC] [San Francisco - LOCATION] [Los Angeles - LOCATION] [and - MISC] [New York - LOCATION]

* 1. Co-reference Resolution

[United Airlines] - [it]

1. Summarize and draw a knowledge graph.

