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Course: COSC 311

Language used: Python

Task 1: How many different words appeared in this paper?

937

Task 2: What are the 10 words that appear most frequently (from high to low)?

{'AI': 22, 'ARE': 23, 'FOR': 23, 'THAT': 36, 'AND': 43, 'A': 48, 'IN': 48, 'TO': 73, 'OF': 74, 'THE': 90}

Task 3: What are the appearance frequencies for the following words? - AI - robotics - climate - materials - algorithms

22
3
12
7
8

Task 4: What are the words appear exactly 2 time, 5 times, and 10 times, respectively?

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Words that occur 2 times:
 {'HELPING': 2, 'RESEARCH': 2, 'FIELDS': 2, 'HANDLING': 2, 'ALREADY': 2, 'TOOL': 2, 'COMPANY': 2, 'DEEPMIND': 2, 'GOOGLE': 2,
'ACROSS': 2, 'HERE': 2, 'TECHNIQUES': 2, 'UNCOVER': 2, 'HISTORY': 2, 'ARTWORKS': 2, 'BIOLOGY': 2, 'TAKES': 2, 'CREATURES': 2,
'JELLYFISH': 2, 'CORALS': 2, 'COMPLEX': 2, 'SPECIMENS': 2, 'FLEXIBLE': 2, 'APPROACHES': 2, 'BUILDING': 2, 'CONVENTIONAL': 2, 'O
THERS': 2, 'ENTIRELY': 2, 'Â€ŒAND': 2, 'ANSWER': 2, 'PAST': 2, 'WOOD': 2, 'ROBOTICIST': 2, 'CAMBRIDGE': 2, 'MASSACHUSETTS': 2,
'GO': 2, 'HIS': 2, 'COLLEAGUES': 2, 'FIELD': 2, '2021': 2, 'DESIGNED': 2, 'WESTERN': 2, 'PACIFIC': 2, 'OCEAN': 2, 'FOCUSED': 2,
'PROGRESS': 2, 'SOPHISTICATED': 2, 'METHODS': 2, 'DEVELOPED': 2, 'STILL': 2, 'USE': 2, 'COMPONENTS': 2, 'YET': 2, 'WIDELY': 2,
'ENTHUSIASTIC': 2, 'USEFUL': 2, 'THREE': 2, 'WATERS': 2, 'ORDER': 2, 'SHIFTS': 2, 'GLOBAL': 2, 'ACTIVITY': 2, 'KNOWLEDGE': 2,
'KNOWN': 2, 'EVENTS': 2, 'PREDICTIONS': 2, 'MAKE': 2, 'HAMÂ€™S': 2, 'Â€ŒSO': 2, 'THROUGH': 2, 'PRODUCE': 2, 'PROJECTIONS': 2,
'WELL': 2, 'DELIVER': 2, 'STUDY': 2, 'ACCURATELY': 2, 'OVERCOME': 2, 'DEEP-LEARNING': 2, 'PARAMETERS': 2, 'MODELLING': 2, 'CURR
ENT': 2, 'REGIONAL': 2, 'REMAIN': 2, 'LARGELY': 2, 'REACH': 2, 'DERIVED': 2, 'MODELS': 2, 'UNDERSTANDING': 2, 'KEY': 2, 'APPLYI
NG': 2, 'PRELIMINARY': 2, 'GROUP': 2, 'ISSUE': 2, 'APPLIED': 2, 'Â€ŒI': 2, 'THINK': 2, 'DISCOVERY': 2, 'TRANSITION-METAL': 2,
'VARIETY': 2, 'PUBLISHED': 2, 'CALLED': 2, 'CATALYSTS': 2, 'METHANE': 2, 'ABLE': 2, 'DAYS': 2, 'WOULD': 2, 'COMPONENT': 2, 'TRA
IN': 2, 'BOTH': 2, 'REMAINS': 2, 'DONÂ€™T': 2, 'WHAT': 2, 'GENERATED': 2, 'PARTICULAR': 2, 'CONDITIONS': 2, 'ASPECTS': 2, 'TIM
E': 2, 'DA': 2, 'PAINTINGS': 2, 'LONDON': 2, 'GALLERY': 2, 'DETECT': 2, 'PIGMENTS': 2, 'WORLD': 2, 'TOGETHER': 2, 'INFORMATIO
N': 2, 'DISCIPLINES': 2, 'EXPERTS': 2, 'POTENTIALLY': 2, 'POINTS': 2, 'SEES': 2, 'CURATORS': 2}

Words that occur 5 times:
 {'SCIENTISTS': 5, 'NEW': 5, 'BASED': 5, 'UNIVERSITY': 5, 'EXAMPLE': 5, 'IMAGING': 5, 'HE': 5, 'ALTHOUGH': 5, 'PATTERNS': 5, 'C
HEMICAL': 5, 'COMPUTATIONAL': 5}

Words that occur 10 times:
 {'OTHER': 10, 'BE': 10}
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Task 5: Draw a bar figure to show the average length of words for each appearance frequency.