



AN AUTOMATION DATA COLLECTION TO SUPPORT THE PROCESSES FOR THE EVOLUTION THE EFFECTS OF HUMAN INDUCED EXTERNAL HAZARDS

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KeyWords

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ABSTRACT

In the vicinity of a nuclear power plant site there may be a multitude sources of human induced hazards. Human induced hazards include all human activities such as all transportation routes, hazardous material storage facilities, pipelines and arsenals which are potentially dangerous and their effects on the nuclear power plant need to be checked. Therefore the data related to the severity of the consequences of an accident becomes necessary and required to use it as a basis to calculate the effects of Human induced hazards on the nuclear power plant. Some of this data is unavailable or temporarily unavailable due to huge time and effort that should be spent to collect and prepare this data in a suitable form, but in many free international websites in the internet some of the unavailable data is exit.

This work introduces an automation method for collecting and preparing this data in a suitable form. An automation method in this paper is implemented to collect the database of air crashes since 1921. This database is required for calculating the impact of the air roads in nuclear power plant.

This automation method can save a lot of money, effort and time in the processes for calculating the effects of human induced hazards because now days several valuable data is available in many free websites. Therefore the need for creating the automation method becomes highly needed to collect the required data and prepare it in suitable form in minimum cost, minimum effort and shortest time.

INTRODUCTION

Nowadays a lot of free data is available on many websites and it is predicted that its size will increase in the future. This property is very useful for public purposes. For example any person can easily know the predicted temperature, humidity, prices of many goods in the market... etc. But for scientific purposes the researchers need to implement an automation way to collect their data to make it useful. For example if the researcher needs the temperature data for his or here scientific work then the researcher not only needs a single record of temperature data but also needs a huge record of this data for about one year or more. It is easy to get a single record of temperature data from any free website but for a huge record for about one year or more this procedure will cost a lot of effort and time. Because of the researcher must perform a hundreds of steps to accomplish this task. For every step the user must manually open the certain webpage that contains the temperature record for every day in the year and manually collect and prepare the required data in a suitable form [1].

Therefore this work introduces the main principle for an automation method to accomplish this task in minimum time and effort which will lead to make the available free data in websites is very useful for scientific purposes[2].

Material and method

The method for creating the automation method should be accomplished in the following steps which are considered as the basic principles for cases like this case.

First step: the user has to determine which kind or kinds of data he or she wants to get it from the internet [3].

Second step: according to the kinds of data the user has to determine which free website or websites in the internet contain the required data

Third step: the user has to create a software application which will act as a compiler to collect and prepare the required data in a suitable form. The algorithm [4] for this software application is as following:-

1. Determine the number and addresses for each webpage which contains the required data[5]
2. for every web page do the following steps:-
 - Open the HTML code for this page
 - Put every word in list
 - Look for the required data in this list
 - Modify the required data in work sheet
 - End for [5,6]

An automation method in this paper is implemented to collect the database of air crashes since 1921. This database is required for calculating the impact of the air roads in nuclear power plant. Because of this database is related to the severity of the consequences of an accident becomes necessary and required to use it as a basis to calculate the effects of Human induced hazards on the nuclear power plant[7]. As mentioned in pervious section the implementation of the automation method is as follows

First step

The kinds of data required are all the data related to every air crash which are as follows

- a. Date and time.
- b. Location and country of this location
- c. Operator “the company who operates the plan”
- d. Flight number
- e. Route “the path of the plan”
- f. AC Type “the company who produced the plan and its model”
- g. The number of fatalities inside the plane and number of fatalities outside the plane
- h. A brief summary about the events which caused the crash.

Second step

The free website which contain all the required data in step number 1 is <http://www.planecrashinfo.com> [8] the sources which are used by this website to compile this database or verify the information obtained are contained in this webpage which its address is <http://www.planecrashinfo.com/reference.htm>. [9]

The webpages which are required to obtain all information about air crashes from 1921 till now are

<http://www.planecrashinfo.com/2017/2017.htm>

<http://www.planecrashinfo.com/2016/2016.htm>

<http://www.planecrashinfo.com/2015/2015.htm>

<http://www.planecrashinfo.com/1921/1921.htm> [8]

After getting all the required data from the previous web pages and making some processing as described before to modify it in the work sheet the output data will be as in figures 1 and 2

Table 1 shows the first part of the generated database which represents all air crashes happened from 7 December 2016 to 14 October 2017. Table 2 shows the last part of this database which represents all air crashes happened from 5 December 1921 to 14 September 1923.

Results and discussion

From pervious section an automation method is implemented to collect the database of air crashes since 1921 till 14 October 2017. This database is very necessary for calculating the impact of the air roads in nuclear power plant.

The time consumed by this automation method is about 1 hour to collect this entire database while collecting it by normal method will consume about tens of hours. Because by using the normal method the user must access 5631 web page and at every web page the user must manually modify the required data from every web page to the database. For every webpage this step will consume in average about 2 minute by the user.

At the end the user will consume $2 \times 5631 = 11262$ minute = 187.7 hour = 7.8 day of continuous work. Therefore the speed up of the automation method is about 188 time faster than the normal method.

Conclusion

As shown from pervious section this automation method saves a huge amount of time for collecting a huge amount of data from authorized free web sites and by default it also saves a huge amount of effort and cost. This automation method can be implemented in many fields which have the same problem. Now days several valuable data is available in many free websites. Therefore the need for creating the automation method becomes highly needed to collect the required data and prepare it in suitable form in minimum cost, minimum effort and shortest time.

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Table 1: First part of the generated database represents all air crashes happened from 7 December 2016 to 14 October 2017.

ID	Date	Time	Location	Country	Operator	Flight #	Route	AC Type	Fatalities:	Ground
1	16-Jan-17	719	Bishkek, Kyrgyzstan	Kyrgyzstan	My Cargo Airlines (ACT Airlines)	6491	HongKong-Bishkek-Istanbul	Boeing 747-412F	4	35
2	21-Feb-17	900	Melbourne, Victoria, Australia	Australia	Australian Corporate Jet Centres PTY. LTD	?	Melbournen-KingIsland	Beechcraft B200 Super King Air	5	0
3	10-Mar-17	1120	Istanbul, Turkey	Turkey	Swan Aviation	?	Istanbul-Bozuyuk	Sikorsky S-76C	7	0
4	27-Mar-17	815	Mautaer, Zimbabwe	Zimbabwe	ETA Air Charter	?	Beira,Mozambique-Harare,Zimbabwe	Britten-Norman BN2 Islander	6	0
5	05-May-17	653	Charleston, West Virginia	Virginia	Air Cargo Carriers	?	Louisville-Charleston	Shorts 300-200	2	0
6	15-May-17	1530	Carlstadt,, New Jersey	Jersey	A&C Big Sky Aviation	?	Philadelphia,PA-Teteboro,NJ	Learjet 35A-452	2	0
7	27-May-17	1402	Tenzing, Nepal	Nepal	Summit Air	409	?	Let L-410UVP-E20	2	0
8	07-Jun-17	1335	Off Dawei, Myanmar	Myanmar	Myanmar Air Force	?	Myeik-Yangon	Shaanxi Y-8F-200W	122	0
9	28-Jun-17	1015	Mount Gambier, South Australia	Australia	Angel	#:	Suttontown-Adelaide	Socata TB1-10 Tobago	3	0
10	10-Jul-17	1600	Near Itta Bena, Mississipi	Mississipi	USMC	?	CherryPoint,NC-ElCentro,CA	Lockheed KC-130T Hercules	16	0
11	14-Oct-17	830	Abidjan, Ivory Coast	Coast	Valan International Cargo Charter	?	BurkinaFaso-Abidjan	Antonov AN-26-100	4	0
12	08-Jan-16	20	Akkajaure Lake, Norrbotten, Sweden	Sweden	West Air Sweden	294	Oslo-Troms	Canadair CRJ-200	2	0
13	02-Feb-16	?	Near Mogadishu, Somalia	Somalia	Daallo Airlines	3159	Mogadishu-Djibouti	Airbus A321-111	1	0
14	24-Feb-16	815	Dana, Nepal	Nepal	Tara Air	193	?	de Havilland DHC-6 Twin Otter 400	23	0
15	26-Feb-16	?	250 miles northwest of Kathmandu, Nepal	Nepal	Kasthamandap Airlines	?	Nepalganj-Jumla	PAC 750XL	2	0
16	09-Mar-16	905	Coxs Bazar, Bangladesh	Bangladesh	True Aviation Ltd.	?	CoxsBazar-Jessore	Antonov AN-26	3	0
17	15-Mar-16	1430	Fatima Pastaza, Ecuador	Ecuador	Military - Ecuador Army	?	Training	IAI Attava 201	22	0
18	19-Mar-16	341	Rostov-on-Don, Russia	Russia	Flydubai	981	Dubai-Rostov	Boeing 737-8KN (WL)	62	0
19	29-Mar-16	1140	Magdelen Islands, Quebec, Canada	Canada	Marquise Aviation Corp.	?	Montreal-Iles-de-la-Magdelen	Mitsubishi MU-2B 60 Marquise	7	0
20	04-Apr-16	1530	Near Pigeon Forge, Tennessee	Tennessee	Smoky Mountain Helicopters	?	Sightseeing	Bell 206L	5	0
21	13-Apr-16	1420	Kiunga, Papua New Guinea	Guinea	Sunbird Aviation	?	Oksapmin-Kiungaraining	Britten-Norman Islander	12	0
22	29-Apr-16	1150	Sorta, Norway	Norway	CHC Helikopter Service	?	GullfflexB-Bergen	Eurocopter EC225LP Super Puma M2+	13	0
23	19-May-16	249	175 miles off the Egyptian coast	coast	EgyptAir	804	Paris-Cairo	Airbus A320-232	66	0
24	22-Jul-16	?	Bay of Bengal, Indian Ocean	Ocean	Indian Air Force	?	Chennai(TambaramAFB)-PortBlair	Antonov 32	29	0
25	05-Aug-16	1238	Dubai, United Arab Emirates	Emirates	Emirates	521	Thiruvanthapuram,India-Dubai,UAE	Boeing 777-31H	0	1
26	31-Aug-16	1100	Russian Mission, Alaska	Alaksa	Hageland Aviation	3190	RussianMission-Marshall	Cessna 208 Grand Caravan	5	0
27	24-Oct-16	720	Malta International Airport	Airport	AE Aviation	?	Malta-Luqa-Malta-Luqa	Swearingen SA277-AT Expditer	5	0
28	18-Nov-16	1915	Elko, Nevada	Nevada	American Medflight Inc.	?	Elko-SaltLakeCity	Piper PA-31T Cheyenne	4	0
29	28-Nov-16	2200	Near La Union, Colombia	Colombia	LAMIA Bolivia	2933	SantaCruz,Bolivia-Medellin,Colombia	Avro RJ-85	71	0
30	03-Dec-16	1122	Near Tanjung Pinang, Indonesia	Indonesia	Indonesian Police	?	PangkalPinang-BatamIsland	M28 Skytruck	13	0
31	07-Dec-16	1620	Near Havlien, Pakistan	Pakistan	Pakistan International Airlines	661	Chitral-Islamabad	ATR-42-500	48	0

Table 2: the last part of this database represents all air crashes happened from 5 December 1921 to 14 September 1923.

ID	Date	Time	Location	Country	Operator	Flight #	Route	AC Type	Fatalities:	Ground
5601	07-Sep-1923	?	Colton, Ohio	Ohio	US Aerial Mail Service	?	?	De Havilland DH-4	1	0
5602	14-Sep-1923	c 18:00	Near Ivinghoe, Buckinghamshire, England	England	Daimler Airways	?	Croydon-Manchester	de Havilland DH-34	5	0
5603	18-Nov-1923	?	Russia		CCCP	?	?	Junkers F-13	3	0
5604	06-Dec-1923	?	Castalia, Ohio	Ohio	US Aerial Mail Service	?	?	De Havilland DH-4	1	0
5605	23-Dec-1923	c 02:30	Over the Mediterranean Sea	Sea	Military - French Navy	?	Toulon-Algiers	Zeppelin Dixmunde (airship)	52	0
5606	24-Dec-1923	?	Egbert, WY	WY	US Aerial Mail Service	?	?	De Havilland DH-4	1	0
5607	14-Jan-1922	?	Paris, France	France	Handley Page Transport	?	?	Handley Page O/10	5	5
5608	21-Feb-1922	?	Near Norfolk, Virginia	Virginia	Military - U.S. Army Air Service	?	?	Dirigible Roma (airship)	34	0
5609	22-Mar-1922	1140	North Atlantic Ocean	Ocean	Aero Limited	?	Miami-Bimini	Aeromarine Model 85 (flying boat)	5	0
5610	07-Apr-1922	1315	Grandvilliers, France	France	Daimler Airways / Grands Express Aeriens	?	Croydon-LeBourget	de Havilland DH-18 / Farman F-60 Goliath	7	0
5611	08-Apr-1922	?	Pao Ting Fou, China	China	?	?	Test	?	17	0
5612	03-Jun-1922	?	Off Folkestone, Kent, England	England	Cie des Messageries Aeriennes	?	Croydon-Paris	Bleriot Spad 27	3	0
5613	04-Jul-1922	?	Fuhlbuttel, Germany	Germany	?	?	Hamburg-Berlin	LVG C VI	2	0
5614	16-Jul-1922	c 16:45	Near Saverne, Lorraine, France	France	Compagnie Franco-Roumaine de Navigation Aérienne	?	Strasbourg-Paris	Potez 29	5	0
5615	26-Jul-1922	?	Cadix, Spain	Spain	Grands Express Aeriens	?	?	Breguet 14	3	0
5616	07-Sep-1922	?	Indianapolis, Indiana	Indiana	US Aerial Mail Service	?	?	De Havilland DH-4	1	0
5617	02-Oct-1922	?	Venice, Italy	Italy	?	?	Venice-London	de Havilland DH-9	4	0
5618	25-Oct-1922	?	Larache, Morocco	Morocco	Grands Express Aeriens	?	?	Breguet 14	2	0
5619	03-Dec-1922	?	Fez, Morocco	Morocco	Grands Express Aeriens	?	Toulouse-Barcelona-Valencia-Alicante-Malaga-Rabat	Breguet 14	1	0
5620	03-Feb-1921	?	Mendotta, Minnisota	Minnisota	US Aerial Mail Service	?	?	De Havilland DH-4	1	0
5621	09-Feb-1921	?	La Crosse, Wisconsin	Wisconsin	US Aerial Mail Service	?	?	Junkers F-13	3	0
5622	15-Feb-1921	?	Off Gibraltar	Gibraltar	Aeropostale	?	?	Breguet 14	2	0
5623	22-Feb-1921	?	Elko, Nevada	Nevada	US Aerial Mail Service	?	?	De Havilland DH-4	1	0
5624	06-Apr-1921	?	Point Cook, Australia	Australia	Military - Royal Australian Air Force	?	?	Avro 504	2	0
5625	21-Apr-1921	?	Mitchel Field, NY	NY	US Aerial Mail Service	?	?	De Havilland DH-4	1	0
5626	29-Apr-1921	?	Cleveland, Ohio	Ohio	US Aerial Mail Service	?	?	De Havilland DH-4	1	0
5627	17-May-1921	?	Rock Springs, Wyoming	Wyoming	US Aerial Mail Service	?	?	De Havilland DH-4De Havilland DH-4	1	0
5628	14-Aug-1921	?	Toulouse, France	France	Aeropostale	?	?	Breguet 14	2	0
5629	24-Aug-1921	c 17:40	River Humber, England	England	Military - Royal Airship Works	?	?	Royal Airship Works ZR-2 (airship)	46	1
5630	06-Sep-1921	?	Paris, France	France	Franco-Roumaine	?	Warsaw-Prague-Strasbourg-Paris	Potez IX	5	0
5631	05-Dec-1921	?	Near Murchinson River, Australia	Australia	West Australian Airways	?	Geraldton-Derby	Bristol 28 Tourer	2	0