Technical Language Processing Community of Interest (TLP - COI)

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(ERDC)

Thank you!

Welcome

Dr. Joannie Chin
Acting Director
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Platforms

- **BlueJeans Q/A** for Question and Answers for the panelists
- **Sli.do** for interactions with the audience
- MBE **Slack workspace** for "after hours" discussions (we will not be checking this while the event is live)

- TLP **Slack workspace** will be launched on Friday for after the event

https://www.sli.do/
#TLP

slido

Where are you from? (If from US say the state, otherwise say the country)

ⓘ Start presenting to display the poll results on this slide.

Video

slido

Describe what you saw in the video in 4 words or less

What Happened

"The cutting tool snapped off. Need to replace tool and inspect spindle for damage. Looks like they were cutting too deep in one pass for the strength of the tool"

"All-around operator error. Looks to be too high a depth of cut at too high a feed-rate. Also looks like the move at the end put too high a stress on the tool. Operator should have retracted the tool before making that move if he/she wanted to keep that depth of cut."

"The DOC is too large and the feed too high for the slot such that the forces increase until tool breakage as the tool approaches the vice. It probably wasn't smart either to machine towards the vice as they have anyway. A typical approach to avoid this problem is to ramp into the slot."

"Too large of an engagement at tool high of a feed."

Problem Codes

Broken CNC

Poor planning

CNC is broken

Broken tool

High depth of cut

Error by operator

Miscellaneous

Too high of feed rate

Operator error

Broken machine tool

Poor process planning

Other

Broken end mill

Technician error

M2 is broken

Broken drill

Gary!!!

Milling machine down

Problem Code 083AM

Power supply problem

Broken drill tip

Part Planning is bad

Design error

N/A

Pick a problem code

Analyzing the Data

"The ==cutting tool snapped off==. Need to replace tool and inspect spindle for damage. Looks like they were cutting too deep in one pass for the strength of the tool"

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Tool is broken

"The DOC is too large and the feed too high for the slot such that the forces increase until ==tool breakage== as the tool approaches the vice. It probably wasn't smart either to machine towards the vice as they have anyway. A typical approach to avoid this problem is to ramp into the slot."

"Too large of an engagement at tool high of a feed."

Analyzing the Data

"The cutting tool snapped off. Need to replace tool and inspect spindle for damage. Looks like they were ==cutting too deep== in one pass for the strength of the tool"

"All-around operator error. Looks to be too ==high a depth of cut== at too high a feed-rate. Also looks like the move at the end put too high a stress on the tool. Operator should have retracted the tool before making that move if he/she wanted to keep that depth of cut."

Depth of cut too large

"The ==DOC is too large== and the feed too high for the slot such that the forces increase until tool breakage as the tool approaches the vice. It probably wasn't smart either to machine towards the vice as they have anyway. A typical approach to avoid this problem is to ramp into the slot."

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Analyzing the Data

"The cutting tool snapped off. Need to replace tool and inspect spindle for damage. Looks like they were cutting too deep in one pass for the strength of the tool"

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Feed rate too high

"The DOC is too large and the feed too high for the slot such that the forces increase until tool breakage as the tool approaches the vice. It probably wasn't smart either to machine towards the vice as they have anyway. A typical approach to avoid this problem is to ramp into the slot."

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Analyzing the Data

"The cutting tool snapped off. Need to replace tool and inspect spindle for damage. Looks like they were cutting too deep in one pass for the strength of the tool"

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Bad process plan

"The DOC is too large and the feed too high for the slot such that the forces increase until tool breakage as the tool approaches the vice. It probably wasn't smart either to machine towards the vice as they have anyway. A typical approach to avoid this problem is to ramp into the slot."

"Too large of an engagement at tool high of a feed."

Analyzing the Data

"The cutting tool snapped off. Need to replace tool and inspect spindle for damage. Looks like they were cutting too deep in one pass for the strength of the tool"

"All-around ==operator error==. Looks to be too high a depth of cut at too high a feed-rate. Also looks like the move at the end put too high a stress on the tool. Operator should have retracted the tool before making that move if he/she wanted to keep that depth of cut."

Operator error

"The DOC is too large and the feed too high for the slot such that the forces increase until tool breakage as the tool approaches the vice. It ==probably wasn't smart== either to machine towards the vice as they have anyway. A typical approach to avoid this problem is to ramp into the slot."

"Too large of an engagement at tool high of a feed."

Maintenance Work Order Data

Raw Data

Effect	Average of Time to Complete (hrs)	Number of Instances	Total Time to Complete (hrs)
Accumulator check requested	1.4590	14	16.05
Vogel lube faults	1.5875	7	6.35
Base cleaning requested	13.575	4	27.15
Table index O/T faults	2.7	3	2.7
Iemca will not load in Auto	313.2	3	939.6
Chip conveyor INOP	1.075	3	2.15
Chip conveyor jammed	3.725	3	7.45
St#2 drill detector INOP	0.15	2	0.15
Table drifting at 1/2 table setting	47	2	94
Motor thermal overload fault - Hydraulic	24	2	24
Machine will not run in Auto		2	
Part not loading into collet		2	
St#8 Hyd flange not repeating	0.15	2	0.15
Power pack leak		2	
Table index O/T at 1/2 table -Turning off Hydraulics		2	

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Clean Data

Effect	Average of Time to Complete (hrs)	Number of Instances	Total Time to Complete (hrs)
Hydraulic Leak	40.8775	39	817.55
Accumulator check requested	1.690	26	35.5
Coolant Leak	122.47	17	1347.2
Bearings check	16.835	16	168.35
Chip conveyor INOP	5.8	15	63.8
Broken screw	3.8722	14	34.85
Table index faults	24.08	13	120.4
Brush unit stuck forward	4.744	10	42.7
Vogel lube fault	2.27	9	11.35
Coolant Pressure Low	3.26	9	16.3
Oil leak	39.2375	8	156.95
Base cleaning requested	13.575	4	27.15
Iemca will not load in Auto	235.9	4	943.6
Bearings noise	79	4	79
Inverter failing to return	0.3	4	0.3

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Total Time to Complete (hrs)		
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Raw Data

Hyd leak at Bar stop pre load position
Major Hydraulic leak at Bottom XD head
Hydraulic leak at cutoff unit
Hyd leak at St#2 chip breaker valve
Hyd leak reported
Hydraulic leak at bar loader -Rubber seal on vacuum
HP Hydraulic line ruptured
Multiple leaks at Iemca -25 Gallons in 48 hours
Hydraulic return line leak
Hyd leak from behind collet #6
Hydraulic leak turret 2
Hydraulic leak actuator or horseshoe
Hydraulic leak at chip breaker valve (? Valve station)
Hydraulic leaks -from collets??
Leak at High Pressure pump
Hyd leak St#2 valve
St#6 valve leaking hydraulic
Hydraulic leak
Hyd leak at locking pin assy
Iemca hydraulic pump leaking -Full tank per day
Hydraulic leak on Side A
Hydraulic leak from power pack
St#8 valve leaking Hyd fluid
Hyd leaks -C/O unit, St#11 Valve, Collet #10 (Internal)
Hydr pump? / Power pack leak / CNCs shuddering
Hydraulic leak at inverter st#8
Hyraulic leak at St#4
Hyd leaks at valve below #7 / Lid leaks at loader
St#8 valve spraying hydraulic fluid
Hyd leak at Iemca pumps tank
Hyd leak from dressing unit
Hydraulic leak at Cutoff valve
Hydraulic leak at power pack -per PM tix
Hydraulic leak found by Doug -3.1 quill
Hydraulic Leak reported -One tank per day
Hydraulics leaking from dressing unit
Major hydraulic leak
Major Hydraulic leak at rotator -Rotator rack is broken
Hydraulic oil getting into Vogel waste oil
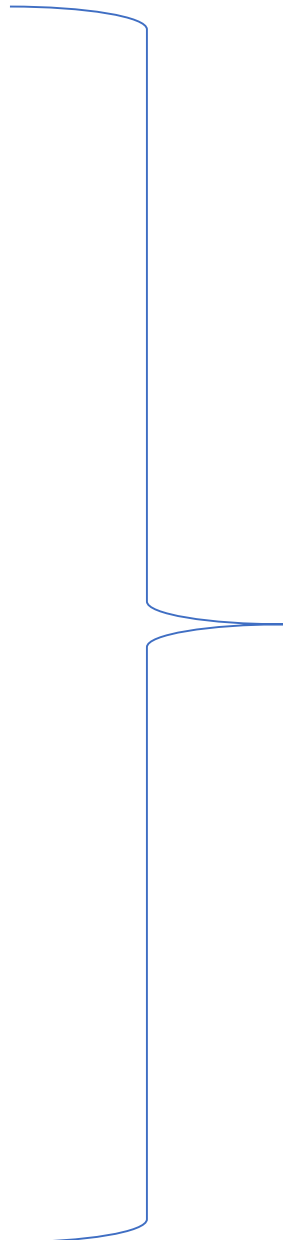
Clean Data

Hydraulic Leak

Raw Data

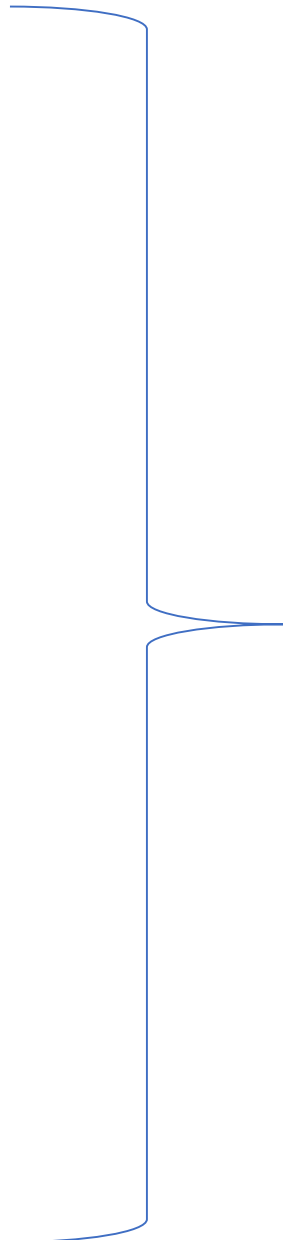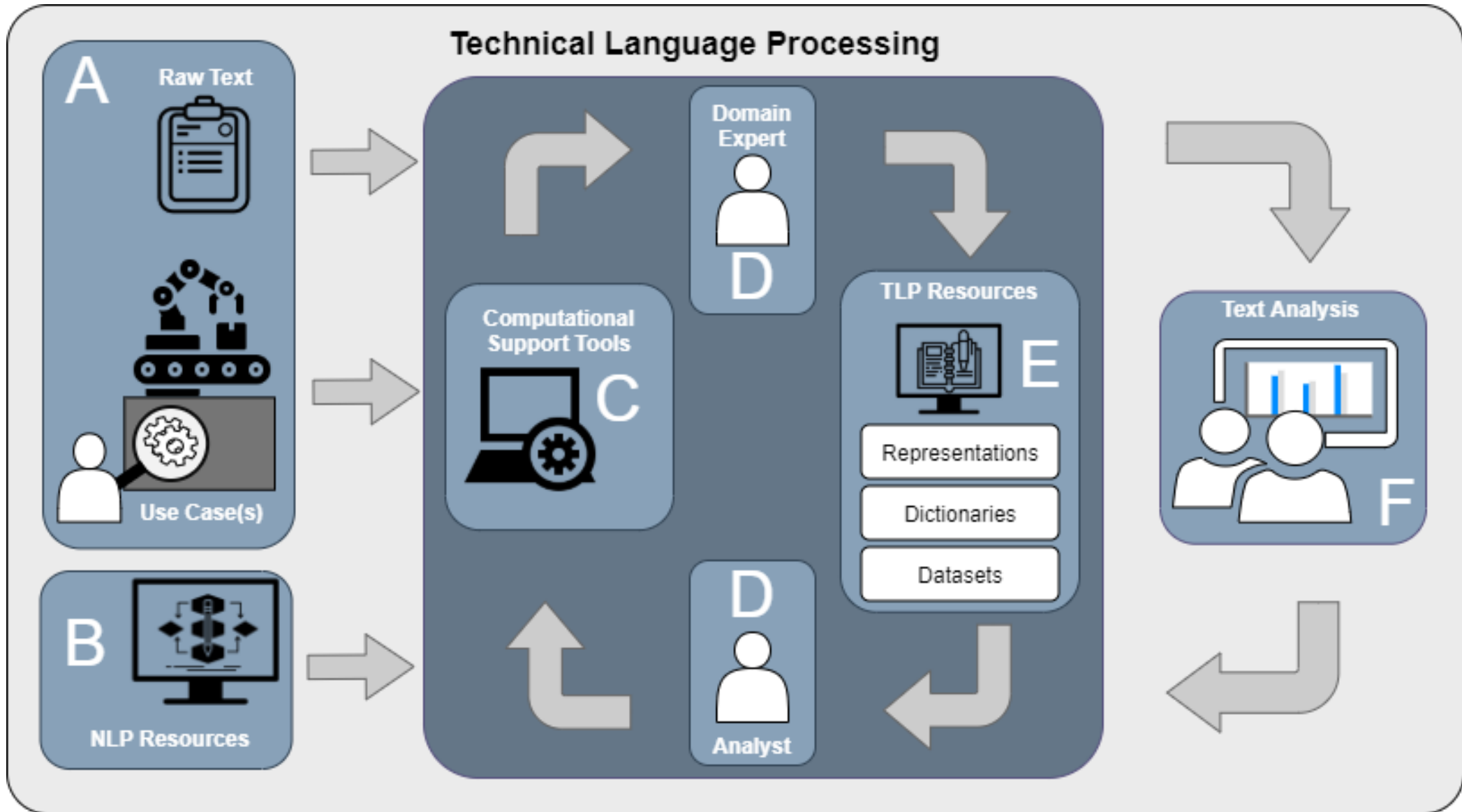Hyd leak at Bar stop pre load position
Major Hydraulic leak at Bottom XD head
Hydraulic leak at cutoff unit

"Hyd leak at St#2 chip breaker valve"

Hydraulic return line leak
Hyd leak from behind collet #6
Hydraulic leak turret 2
Hydraulic leak actuator or horseshoe

"Iemca hydraulic pump leaking -Full tank per day"

Hydraulic leak
Hyd leak at locking pin assy
Iemca hydraulic pump leaking -Full tank per day
Hydraulic leak on Side A

"Hydraulics leaking from dressing unit"

Hyraulic leak at St#4
Hyd leaks at valve below #7 / Lid leaks at loader
St#8 valve spraying hydraulic fluid
Hyd leak at Iemca pumps tank
Hyd leak from dressing unit

"Hydraulic Leak reported - One tank per day"

Major hydraulic leak
Major Hydraulic leak at rotator -Rotator rack is broken
Hydraulic oil getting into Vogel waste oil

Clean Data

Hydraulic Leak

Technical Language Processing

A — Raw Text / Use Case(s)
B — NLP Resources
C — Computational Support Tools
D — Domain Expert / Analyst
E — TLP Resources (Representations, Dictionaries, Datasets)
F — Text Analysis

MONDAY, APRIL 12 4:00-6:00 PM ET: THE VALUE OF TLP
This session will introduce the audience to TLP. Presenters will discuss the value of the TLP process and how TLP analysis has improved operations.

TUESDAY, APRIL 13 4:00-6:00 PM ET: TOOLS IN TLP
Different TLP tools will be presented and discussed. Discussions will center around the capabilities of the current TLP tools and the needs of future TLP tools.

WEDNESDAY, APRIL 14 4:00-6:00 PM ET: THE NEED FOR TLP DATASETS
Presenters will discuss the importance of TLP datasets and how this data improves TLP research. Discussions will focus on current TLP datasets and the value of creating publicly available datasets for the TLP community.

THURSDAY, APRIL 15 4:00-6:00 PM ET: CREATING THE NECESSARY TLP RESOURCES
Community driven, domain specific TLP resources will be discussed. The need for community supported and developed domain specific resources, such as ontologies, data representations, data schemas, and text embeddings will be presented.

FRIDAY, APRIL 16 4:00-6:00 PM ET: TLP COI NEXT STEPS
This session will focus on the next steps for the TLP COI. The structure of the COI, the outputs of the COI, and the next meetings will be discussed.

slido

What outputs do you want to see from this workshop?

ⓘ Start presenting to display the poll results on this slide.

Logistics for Today

- Each presentation is 10 minutes with no Q/A
  - The moderator will alert everyone when 1 minute remaining
- After all presenters are concluded, we will begin the virtual panel Q/A session

- Please ask questions via the BlueJeans chat and upvote any other questions that you think are relevant to you
- The moderator will direct questions to the panelists, each panelist will get up to 1 minute for response.
  - We will do our best to ask each question to all panelists
- We will also be asking questions back to the audience via Sli.do, so the panelists can comment on the responses

NIST Disclaimer

The use of any products described in any presentation does not imply recommendation or endorsement by the National Institute of Standards and Technology, nor does it imply that products are necessarily the best available for the purpose.

The Value of TLP

	Name	Title	Company	Presentation
Presentations 4:20 – 5:10 PM	**Sarah Lukens**	Data Scientist	GE Digital	An overview of some industrial use cases for technical language processing
	Mikkel Haggren Brynildsen Anna Nielsen	Chief Data Scientist; Data Scientist	Grundfos	Technical communication with users
	Tyler Bikaun	Ph.D. Student	Centre for Transforming Maintenance through Data Science & University of Western Australia (UWA)	Semi-automated Estimation of Reliability Measures from Maintenance Work Order Records
	Anna Conte, Lynn Phan, Coline Bolland	Research Fellows	NIST	Why Annotation Matters: Semi-structuring MWO Text to Inform Fault Detection Methods
	Dr. Dnyanesh G. Rajpathak	Staff Researcher	General Motors	An ontology-based text mining and semantic similarity systems for knowledge discovery from heterogeneous data in the automotive domain
Panel 5:10 – 6:00 PM	All Presenters			

The Value of TLP

Tomorrow

Tuesday, April 13	
10:00 - 11:00 AM	**Beyond Industrial AI: The path to actionable intelligence** **Michael Sharp,** Ph.D., Reliability Engineer, NIST
12:00 - 1:00 PM ET	**ASME Model-Based Enterprise Standards Committee Overview** **Fred Constantino,** Project Engineering Advisor, ASME
2:00 - 3:35 PM ET	**ASME MBE Standards Workshop: What are the key characteristics of a model-based-standard?** **ASME Model Based Enterprise Standards Committee** •**Thomas Hedberg, Jr., Ph.D., P.E.,** Applied Research Laboratory for Intelligence and Security (ARLIS) •**William Sobel,** William and Valerie Sobel LLC
4:00 - 6:00 PM ET	**TLP COI Workshop**

Tomorrow: Tools in TLP

	Name	Title	Company	Presentation
Presentations 4:15 – 5:10 PM	**Thurston Sexton**	Mechanical Engineer	NIST	Nestor: Visual Information Seeking for Annotation
	Jim Kukla	Co-Founder	Redshred	RedShred: Bootstrapping Resources for Technical Language Processing
	Michael Stewart	PostDoc	Centre for Transforming Maintenance through Data Science & University of Western Australia (UWA)	Redcoat: a Collaborative Annotation Tool Supporting Technical Language Processing Research
	Rezarta Islamaj	Staff Scientist	National Library of Medicine (National Center for Biotechnology Information)/National Institutes of Health (NIH)	TeamTat: a collaborative text annotation tool
	Alexis Allot	Postdoctoral Fellow	National Library of Medicine (National Center for Biotechnology Information)/National Institutes of Health (NIH)	PubTator: automated concept annotation for biomedical full text articles
Panel 5:10 – 6:00 PM	All Presenters			

Questions?

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