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A success pipeline from  
college to university  
and beyond

SEPTEMBER 2021



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## 8 L I 8 I E Q

The team is composed of members of the Dawson College and Concordia University communities who  
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Sherry Blok (M V I G X S V S J 4 V S K V E Q W ' S R G S V H M E ' S R X M R Y M R K ) H Y G E X M

Joel Trudeau ( E [ W S R % - % V X M ¼ G M E P - R X I P P M K I R G I 4 V S N I G X O I E H \* E G Y P

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Salvatore Costanzo % G E H I Q M G ' S S V H M R E X S V ' S R G S V H M E ' S R X M R Y M R K ) H Y

Simona Ionescu & Y W M R I W W - R X I P P M K I R G I E R H - R J S V Q E X M S R % R E P ] W X ' :  
Concordia University

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Brandiff Caron ' S R G S V H M E 9 R M Z I V W M X ]

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)RKMRIIV ERH '7) 6IWTSRWMFPI %- &SEVH 1IQFIV 1MGVSWJSX

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%HHMXMSREP 'SRXVMFYXSVW

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Fabien Cornu 'SRGSVHME 9RMZIVWMX]

Lindsay Vargas (E[WSR 'SPPIKI

## % G O R S [ P I H K I Q I R X W

;I I\TVIWW SYV KVEXMXYHI XS 4-PI QSRXV£EPEMW H...IRWIMKRIQIRX  
JSV TVSZMHMRK E KVERX XS WYTTSVX XLI HIZIPSTQIRX SJ XLMW EV  
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VIWTSRH GSPPIGXZIP] MR EHHVIWWMRK XVEMRMRK ERH HIZIPSTQI  
MRXIPPMKIRGI ¼IPH

The Concordia University and Dawson College project is one of 14 collaborative projects from partner universities and colleges to develop training and competency framework projects.

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4 - % was created to ensure that college and university programs remain aligned with industry needs and to shed light on the social and ethical considerations related to the rise of AI. PIA supports post-secondary institutions to effectively create and YTHEXI EGEHIQMG TVSKVEQW MR SVHIV XS V AI needs.

;I EVI EPWS KVEXIJYP JSV XLI WYTTSVX VIGIMZIH JVSQ SYV MRWXM



' S R G S V H M E ' S R X M R Y M o r e s d i s t i n c t i o n e X M S R  
STTSVXYRMXMIW MR XLI QEVOIX XS FIXXIV ER  
professional and organizational growth needs of our society.  
3RI HE] EX E XMQI [I MRZMXI TISTPI JVSQ HM  
and stages of life to take part in trend setting trainings that  
generate concrete results.



( E [ W S R ' S M W I K L I P E V K I W X G S P P I K I M R 5 Y I F  
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provide a welcoming and stimulating environment in which to  
PIEVR ERH [SVO ERH [LIVI WXYHIRXW EVI TVI  
role as productive and responsible citizens of the world.



## % Y H M I R G I

The intended audience for this document includes:

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### 1. Educators

y ,MKLIV IHYGEXMSR JEGYPX] XIEGLMRK MR XIGLRMGEP ¼  
EVXM ¼ GMEP MRXIPPMKIRGI

y Higher education faculty looking at integrating AI competencies  
in the curriculum

### 2. Program developers

- y Curriculum developers
- y Instructional designers
- y Course developers

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4 V S K V E Q E H Q M R M W X V E X S V W S J E V X M ¼ G M E P M R X I P P M

2. Student success centers looking at developing complimentary trainings for technical or  
non- technical students

3. Training managers and human resource managers responsible for developing employees  
[ S V O M R K M R E V X M ¼ G M E P M R X I P P M K I R G I

4. Prior learning coordinators

y 6 I G S K R M X M S R S J E G U Y M V I H G S Q T I X I R G M I W 6 % ' G S S V H

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 MR XLI 1SRXVIEP %- GSRXI\X ;MXL IXLMGW FIMRK MRXIKVEP XS X  
 IXLMGEP GSQTIXIRGMIW LEZI FIIR MRXIKVEXIH MRXS XLI XIGLRMG

8LMW GSQTIXIRG] JVEQI[SVO MW E XSSP JSV ZEVMSYW IHYGEXMSF  
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	8 I G L R M G E P	& Y W M R I W W	, Y Q E R
8 L I Q I	y Data	y AI Initiative and Project Planning	y Innovation
	y Mathematics and Statistics	y AI Initiative and Project Scaling	y Teamwork
	y Programming	y AI Technologies	y Professionalism
	y 1 E G L M R I 0 I E V R M R K		
	y ( I I T 0 I E V R M R K		
	y Infrastructure		
	y 0 M F V E V M I W E R H * V E Q I [ S V O W		

## ,S[ XS 6IEH XLI 'SQTIXIRG] \*VEQI[SVO

-R SVHIV XS FIWX WIVZI SYV RSR XIGLRMGEP EYHMIRGI IEGL HSQE  
 AI competency framework has been divided into six sections. The division allows for our non-technical  
 EYHMIRGI XS JEQMPMEVM^I XLIQWIPZIW [MXL XLI WTIGM¼G HSQEMR  
 competencies at a more granular level.

- \* S G Y W % V I E high-level terms used to describe the category of competencies presented.
- \* S V I \ E Q T A Is a focus area for the technical domain
- \* S G Y W % V I E 8 L I Q I

% - ' S Q T I X I R G ] \* V E C  
8 I G L R M G E P ( S Q E M R















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 O I E V R M R K  
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 V E O

)\EQTPIW SJ PMFVEVMIW ERH JVEQI[SVOW
4]XLSR 6 ' ' .EZE .YPME
<b>Data Preprocessing</b>
Prepare features for use in supervised or non-supervised learning tasks
'SQTYXI JIEXYVIW JSV HMJJIVIRX X]TIW SJ HEXE WYGL EW
1.1.1.1 Encode categorical data
1.1.1.2 Identify and correct errors in categorical data
1.1.1.3 Normalize/standardize features
1.1.1.4 Reduce dimensionality of high-dimension datasets
1.1.1.5 Compute features in time windows
'VIEXI E HEXE HMGXMSREV] EPWS GEPPIH GSHIFSSO XS HSGYC
pretations of features in the dataset
)ZEPYEXI JIEXYVIW JSV YWI MR 10 QSHIPW
1.1.2.1 Compute feature correlation matrices
1.1.2.2 Detect outliers from features
1IEWYVI JIEXYVI MQTSVXERGI JVSQ 10 QSHIPW
1.2 Establish data pipelines
Connect data sources to models
1.2.2 Use data structures native to machine learning libraries
Resample large datasets
<b>Supervised Learning</b>
Manage a supervised learning framework
(MZMHI HEXE MRXS XVEMR XIWX ERH ZEPMHEXMSR WIXW
2.1.1.1 Apply k-fold validation
2.1.1.2 Apply leave-one-out validation
2.1.1.3 Apply validation in a multi-class context
2.1.2 %TTP] GSVVIGX TIVJSVQERGI QIEWYVIW JSV VIKVIWWMSR
ERH FMR
2.1.2.1 Identify correct measures
2.1.2.2 Evaluate model performance
8YRI L]TIVTEVEQIXIVW SJ GPEWWM¼GEXMSR ERH VIKVIWWMSR
QIXL
2.1.3.1 Apply grid search
2.1.3.2 Apply optimization methods
Handle class imbalance
2.1.4.1 Resample the training set to adjust class distributions
2.1.4.2 Simulate entries in the minority classes
%HNYWX GPEWW [IMKLXW MR GPEWWM¼GEXMSR QIXLSHW
%TTP] WYTIVZMWIH PIEVRMRK XS WTIGM¼G XEWOW
4EVEQIXVM^I ERH ETPP] GPEWWM¼GEXMSR QIXLSHW
'SRXVEWX GPEWWM¼GEXMSR QIXLSHW
7IPIGX GPEWWM¼GEXMSR QIXLSH JSV XEWO
4EVEQIXIVM^I GPEWWM¼GEXMSR QIXLSH
2.2.1.4 Apply ensemble methods
2.2.1.5 Apply semi-supervised learning methods
9WI QEGLMRI PIEVRMRK PMFVEVMIW JSV GPEWWM¼GEXMSR



(EXE  
 ERH 7XEXM  
 WSKYEQ  
 DMRK  
 OIEVRMR  
 RK  
 OIEVRM  
 RK  
 RJV  
 EWXY  
 YGERH  
 QMFEV  
 VEQ

-HIRXMJ] XLI VSPI XLEX E LYQER GER TPE] JVSQ E ,YQER MR XLI P and when to defer to human in the context of the AI system to make a decision WE] [LIR XLI %- W]WXIQ MW YRGIVXEMR MR MXW HIGMWMSR
Evaluate the relevance and representativeness of synthetic data to avoid issues of bias GSRWYPX [MXL HSQEMR I\TIVXW
<b>%VXM¼GMEP 2IYVEP 2IX[SVOW</b>
Use general multi-layer neural networks
Build multi-layer neural networks
2.1.1.1 Apply perceptrons
2.1.1.2 Build multi-layer neural networks
2.1.1.3 Select activation functions
2.1.1.4 Select loss functions
2.1.1.5 Understand optimizers
Apply multi-layer neural networks for supervised learning
2.1.2.1 Tune neural network hyperparameters 'SR¼KYVI HVSTSYX ERH VIKYPEVM^EXMSR
2.1.2.3 Evaluate multi-layer perceptrons
2.1.2.4 Apply multi-layer perceptrons to regression problems %TTP] QYPXM PE]IV TIVGITXVSRW XS GPEWWM¼GEXMSR TVSFPI
9WI WTIGM¼G HIIT PIEVRMRK QSHIPW
1SHIP HEXE [MXL 'SRZSPYXMSREP 2IYVEP 2IX[SVOW '22W
2.2.1.1 Build Convolutional Neural Networks
2.2.1.2 Build graph convolutional networks
2.2.1.3 Train convolutional networks
2.2.1.4 Apply convolutional networks to image data
2.2.1.5 Apply convolutional networks to video data 1SHIP HEXE [MXL 6IGYVVIRX 2IYVEP 2IX[SVOW 622W
2.2.2.1 Build Recurrent Units
2.2.2.2 Build long/short term memory units
2.2.2.3 Build Transformers
2.2.2.4 Train RNNs
2.2.2.5 Apply RNNs to textual data
2.2.2.6 Apply RNNs to time series data
2.2.2.7 Apply RNNs to sensors data
Generate data with deep learning models
2.2.3.1 Build autoencoders
2.2.3.2 Build generative adversarial networks
2.2.3.3 Generate textual data +IRIVEXI WMKREPW WYGL EW MQEKI ZMHIS WSYRH OIEVR FILEZMSVW [MXL HIIT VIMRJSVGIQIRX PIEVRMRK 60 %TTP] ZEPYI FEWIH QIXLSHW JSV HIIT 60 %TTP] TSPMG] KVEHMIRX QIXLSHW JSV HIIT 60 %TTP] QSHIP FEWIH QIXLSHW JSV HIIT 60 &IRGLQEVO HIIT 60 %TTP] HIIT 60 XS ZEVMSYW HSQEMRW WYGL EW VSF SXMGW ZM
<b>)\EQTPIW SJ PMFVEVMIW ERH JVEQI[SVOW</b>
4]XSVGL 8IRWSV½S[ /IVEW







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1.4.3. Consolidate the project roadmap
(1¼RI TVSNIGX TLEWIW ERH OI] QMPIWXSRIW
2IKSXMEXI JVIUYIRG] SJ I\IGYXMZI WXIIVMRK GSQQMXXII PIZIP and presentations
4VIWIRX TVSNIGX TPERRMRK XS HMZIVWI EYHMIRGIW WYGL EW
4VIWIRX XLI IRZMWMSRIH EKMPI QIXLSHSPSK] WYGL EW MXW E
1.4.3.4. Incorporate insights from external stakeholders for ethics considerations in the project roadmap
<b>Data and AI Project Execution</b>
Manage internal technical and multidisciplinary teams
2.1.1. 0IEH %- MQTPIQIRXEXMSRW
(1¼RI VSPIW ERH VIWTSRWMFMPMXMIW
2.1.1.2. Facilitate discussions on high-level working agreements
2.1.1.3. Monitor overall project progress
2.1.1.4. Monitor individual contributor workload
2.1.1.5. Establish working group on ethics considerations
2.1.2. Overcome existing and new roadblocks
2.1.2.1. Negotiate workarounds
2.1.2.2. Justify need for new resources
2.1.2.3. Establish channels between departments for ethics considerations
2.1.3. Establish project management artifacts and tools
2.1.3.1. Facilitate agile/scrum ceremonies
7IX YT TVSNIGX QEREKIQIRX ERH TVSHYGXMZMX] IRZMVSRQIRX
2.1.4. Coach individual contributors
)WXMQEXI VIUYMVIH WYTTSVX FEWIH SR WMXYEXMSREP PIEHIV
2.1.4.2. Prepare action plan for customized support per member/role
'LIGO MR SR GSRXVMFYXSVW MRHMZMHYEPP] SR E VIKYPEV FE
2.1.4.4. Ensure completion of ethics training prior to start of project work
Manage external and other business stakeholders
2.2.1. Establish realistic expectations amongst stakeholders
2.2.1.1. Communicate AI project outcomes using language that is appropriate to the target stakeholder
(1¼RI OI] %- TVSNIGX QIXVMGW ERH EGGITXEFPI XLVIW LSPHW
%PMKR I\TIGXEXMSRW [MXL XLI SVKERM^EXMSRW...W WXVEXIKM
)WXEFPMWL TVSGIWWIW WYGL EW WYVZI]W ERH JSGYW KVSYT feedback
3TIVEXMSREPM^I VIUYMVIQIRXW YWMRK XSSPW WYGL EW 5YEP
2.2.2. Implement a project status tracking system
(IZIPST HEWLFSEVHW JSV /4- EREP]WMW
2.2.2.2. Maintain project and sprint backlog
2.2.3. 1EREKI GVMWW L]TI ERH RSMWI EVSYRH XLI %- TVSNIGX
4VITEVI QYPXM WXEOILSPHIV TVSEGXMZI TVSNIGX GSQQYRMG
2.2.3.2. Identify potential risks related to miscommunication
Deliver AI solutions
2.3.1. 3VKERM^I TVSNIGX EWWIXW JSV HIPMZIV] WYGL EW GSHI ERH HSG
&YMPH GSHI VITSWMXSVMIW WYGL EW MR +MXPEF ERH +MX,YF
4VITEVI ORS[PIHKI QEREKIQIRX TPEXJSVQW WYGL EW 'SR½YIR
2.3.2. Establish DevOps foundation for AI project lifecycle









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4.2.1.4 Score how each user felt about the prototype
4.2.1.5 Implement mechanisms to report feedback anonymously to offer testers protections in sensitive use-case violations
4.2.2 Assess the proposed prototype
-HIRXMJ] GSRWXVEMRXW ERH ½E[W FEWIH SR XIWX VIWYXPXW W SV VI¼RIH
-HIRXMJ] RSZIP ERH GSRZIRMIRX JIEXYVIW WYGL EW [LEX [SVO
9THEXI XLI TVSX SX]TIW FEWIH SR JIIHFEGO WYGL EW F] YWMRK WY¼GMIRX VI¼RIQIRX MW EGLMIZIH
+VSYT JIIHFEGO MRXS WSGMSPSKMGEP WYGL EW GYPXYVI LM GSRWMHIVEXMSRW WYGL EW WXVIRKXL SJ TVMZEG] XLVSYKL XLI ZE ETTSTVMEXIRIWW SJ XLI JEMVRIWW QIXVMGW IUYEPM^IH SHHW VINI
4.2.2.5. Prioritize sociological and technical considerations to address according to project budget
-HIRXMJ] VIH PMRIW RS KS ^SRIW [LMGL EVI HIXIVQMRIH XS FI EVI WLS[ WXSTTIVW WYGL EW XLI YWI SJ JEGMEP VIGSKRMXMSR MR T

Communication	
Develop a communication strategy for the AI project team	
1.1.1 Investigate the AI team project context	
4VSHYGI PMWX SJ EPP WXEILSPHIVW XLEX [MPP GSPPEFSVEXI HIZIPSTIV HEXE IRKMRIIV HEXE WGMIRXMXW WGVYQ QEWXIV TVSNI	
(I¼RI PMWX SJ IITIGXIH HIPMZIVEFPIW JSV IEGL WXEILSPHIV EVGLMXIGXYVI HIWGVMTXMSR EGXMZMXMIW VSEHQET GSHI HSGYQI	
(I¼RI PMWX SJ HIGMMSRW XLEX RIIH XS FI GSQQYRMGEXIH W EVGLMXIGXYVI TIVJSVQERGI QIXVMGW	
(I¼RI PMWX SJ TSXIRXMEP MWWYIW XLEX [MPP RIIH XS FI GSQQ WYGL EW ERXMGMTXIH HIPE]W XIGLRMGEP HM¼GYPXMIW	
1.1.1.5. Evaluate the list of stakeholders to include a diverse group of internal and external participants that matches the target audience of the project	
1.1.1.6. Evaluate baseline knowledge of selected stakeholders for base issues in ethics considerations WYGL EW TVMZEG] JEMVRIWW XVERWTEVIRG]	
(I¼RI PMWX SJ VIWSYVGIW WYGL EW ZMHISW TETIVW LERHFS WXEILSPHIVW XS ¼PP ORS[PIHKI KETW SR IXLMGW GSRWMHIVEXMSR	
1.1.2 Design the communication strategy	
4VSHYGI E 6IWTSRWMFPI %GGSYR XEFPI 7YTTSVXMRK 'SRWYP] 6IWTSRWMFMPMX] 1EXVM\ YWMRK PMWX SJ HI¼RIH VIWTSRWMFMPMX MWWYIW ERH WXEILSPHIVW	
1.1.2.2 Identify groups involving stakeholders with similar responsibilities	
(I¼RI E WIX SJ XIEQ MRXIVEGXMSRW WYGL EW QIIXMRKW HMW MHIRXM¼IH KVSYTMRKW MR XLI 6%7'- VIWTSRWMFMPMX] QEXVM\	
(I¼RI JVIUYIRG] SJ IEGL XIEQ MRXIVEGXMSR	
0MWX EZEMPEFPI GSQQYRMGEXMSR QIXLSHW WYGL EW TLSRI MR TIVWSR QIIXMRKW	
(I¼RI GSQQYRMGEXMSR QIXLSHW JSV IEGL XIEQ MRXIVEGXMSR GLEX SV I QEMP [IIOPI] XIEQ QIIXMRKW YWMRK ZMHISGSRJIVIRGMRK	
1.1.2.7. Identify limitations of technical and cost barriers for having inclusive participation from all stakeholders	
1.1.3 Implement the communication strategy	







'LEPPIRKI XLI FEWMW JSV GLSSWMRK XLI TVMQEV] KSEP JSV TY EWOMRK MW MX VSSXIH MR E TEWWMSR SV KIRYMRI MRXIVIWX XS PIE E WYTIV¼GMEP GYVMSYWMX] FIGEYWI MX MW TSTYEV
0MWX WYFNIGXW EVIEW ERH WOMPPW XLEX ]JSY EVI TEVXMGYPE MR WYGL EW GSQTYXIV ZMWMSR EYXSRQSQSYW ZILMGPIW VSF SXMG EGGSYR XEFMPMX] KSZIVRERGI
0MWX VIUYMVIH WYFNIGX EVIEW ERH WOMPPW XS PIEVR FEWIH WYGL EW GSRWYPXMRK E HSQEMR I\TIVX GEVIIV EHZMWSV NSF HIW
4VSHYGI E ¼REP PMWX SJ WYFNIGX EVIEW ERH WOMPPW XS PIE ERH KSEP VIUYMVIQIRXW
6IZMI[ XLI GSQTMPIH PMWX [MXL WSGMEP WGMIRGIW ERH XIGLFR
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-HIRXMJ] WTIGM¼G PIEVRMRK EGXMZMXMIW F] GSRWYPXMRK P VIKMWXIVMRK XS E WIVMIW SJ [IFMRE VW SV WTIGM¼G GSYVWIW SR E
'PEWWMJ] XLI MHIRXM¼IH PIEVRMRK EGXMZMXMIW EW IMXLIV W GPEWWIW GSRJIVIRGIW SV WIPJ TEGIH ER][LIVI ER]XMQI WYGL EW
4VSHYGI E GEPIRHEV SJ PIEVRMRK EGXMZMXMIW PMJIPSRK PI WIPJ TEGIH EGXMZMXMIW XS TYVWYI MR E WTIGM¼G XMQI JVEQI WY XS HIHMGEXI XS PIEVRMRK SZIV XLI RI X ]IEV
1.1.2.5 Determine your level of time commitment to learning
1.1.2.6. Determine case studies for ethical considerations to gain hands-on experience with applying GSRGITXW WYGL EW TVMZEG] FMEW XVERWTEVIRG] EGGSYR XEFMP
Implement the lifelong learning plan
1.2.1 Perform self-paced learning activities
*SPPS[ XLI PEXIWX HIZIPSTQIRXW F] WDEMNRK [IIFKEVXMM SRHW FMEWIW TETIVW [MXL GSHI
1.2.1.2 Complete self-paced online learning activities as per established calendar WYGL EW SR (EXE'EQT 4PYVEP7MKLX /EXE'SHE 'SYVWIVE IH\ SVK
;EXGL ZMHIS VIZMI[W JVSQ I\TIVXW MR XLI ¼IPH SJ %- WYGL E
'SPPEFSVEXI SR STIR TVSNIGXW WYGL EW MR QEGLMRI PIEVRM WYGL EW F] YWMRK STIR WSYVGI TVSNIGXW SR +MX,YF
1.2.2 Perform scheduled learning activities
4EVXMGMT EXI EX WGLIHYPH KVSYT QIIXYTW WYGL EW MR %- G
4EVXMGMT EXI MR [IFMRE VW ERH [IFGEWXW WYGL EW /H2YKKIX
%XXIRH GSRJIVIRGIW WYGL EW 3TIR (EXE 7GMIRGI 'SRJIVIRGI ;SVPH 7YQQMX %- 2IYV-47
1.2.2.4 Enrol in a formal education program in AI
1.2.2.5 Present at conferences or to communities of practice
1.2.2.6. Participate in online communities that are centered on ethical considerations of AI WYGL EW 1( 7+ 1SRXVIEP %- )XLMGW -RWXMXYXI

<b>Goal Setting</b>
2.1 (I¼RI XLI FYWMRIWW SFNIGXMZI JSV XLI %- TVSNIGX
2.1.1 Formulate the business objective





## 2 E V V E X M Z I W

The goal for this section is to provide users of the AI competency framework with different contexts  
MR [LMGL XLI MHIRXM¼IH ORS[PIHKI WOMBSPFEGGSRHPEVFMIPM&MWW G B  
characters based on interviews have been developed for program developers and educators.  
-R XLI WEQI [E] XLEX WXYHIRXW EVI HMZIVWI IEGL [MXL XLIMV S[R  
the context is critical for these narratives.

8LI REVVEXMZIW HIWGVMFI XLI VSPI SJ E TVSKVEQ HIZIPSTIV ERH E  
ERH E GSRXMRYMRK IHYGEXMSR 'SRGSVHME 'SRXMRYMRK )HYGEXM



## ) H Y G E X S V

.YPMIR MW ER I\TIVMIRGIH IHYGEXSV [LS XIEGLIW ERH HIZIPSTW GS continuing education levels in Montreal. Julien interacts directly with their students and attempts to translate complex concepts inherent in AI into easy-to-understand content for a diverse group.

.YPMIR EHLIVIW XS XIEGLMRK WTIGM¼G GSYVWI PIZIP PIEVRMRK SY YWIW XLIWI XS GVIEXI VIPIZERX PIEVRMRK EGXMZMXMIW %HHMXMS GSQTIXIRGMIW ERH PIEVRMRK SYXGSQIW F] GVIEXMRK E WTIGM¼G V in additional research on content and teaching strategies to curate content for students after YRHIVWXERHMRK XLI WXYHIRX RIIHW -R ~~GESR WMRLYMRKVIFYZERXMRH~~ experience to the classroom and even coaches students on approaching the job market and connecting students to industry.

%PXL SYKL .YPMIR EHLIVIW XS E GYVVMGYPYQ XLI] ¼RH GVIEXMZI [ [LIR WXYHIRXW EVVMZI XS [LEX XLI] QYWX FI EFPI XS HS [LIR XLI] P QMKLX FIKMR [MXL IWXEFPMWLIH GSYVWI SYXPMRIW ~~GSQTIXIRGMIW~~ VIUYMVIH XS XVERWJSVQ XLSWI MRXS E PIEVRMRK I\TIVMIRGI JSV V

Julien also takes on additional responsibility by developing courses in AI and emerging technologies.

;LIR .YPMIR HIZIPSTW GSYVWIW XLI] EVI VIWTSRWMFPI JSV

- y Understanding the goal of the course meaning what we ultimately want to accomplish
- y Developing course learning outcomes
- y



'SQTIXIRG] \*VEQI[SVO

8LI %- GSQTIXIRG] JVEQI[SVO MW E GSQQSR WIX SJ GSVI GSQTIXIRG]
%W ER %- IHYGEXSV .YPMIR IRWYVIW XLEX XLIMV GSYVWIW TVITEV
FIGEYWI XLI JVEQI[SVO GSZIVW EPP SJ XLI GSVI GSQTIXIRGMIW ER
select the competencies that are relevant to their context and that respect their constraints including
XMQI FYHKIX ERH MRWXMXYXMSREP TVSGIWWIW XS ETTP] MR XLI
,IVI EVI X[S EVIEW MR .YPMIR...W VSPI EW ER IHYGEXSV [LIVI XLI %-
meaningfully contribute:

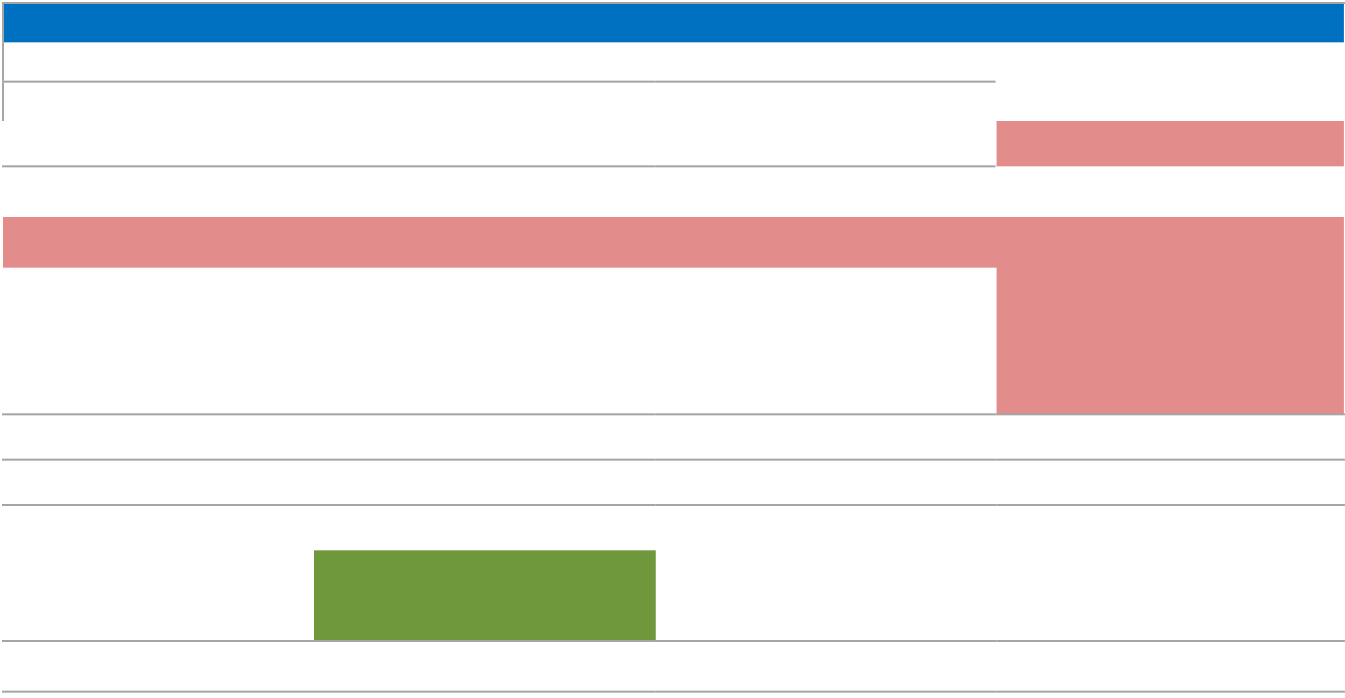
1. Creating learning activities for students
  - y In practical terms this involves combining several sub-competencies and sub-sub competencies from the framework to help develop an activity
2. Developing assessments based on course learning outcomes and competencies

y -R '^+)4 XLMW MW QSVI PMOIP] HSRI EX XLI GSYVWI GSQ

### (E[WSR 'SPPIKI 9WI 'EWI

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EX XLI GSPPIKI PIZIP MW XS ¼RH [E]W XS WGEPI %- SJJIVMRKW ERH
XLMW (E[WSR 'SPPIKI MW EGXMZIP] FYMPHMRK GETEGMX] XS WYTT
in curricula. The goal is to expose as many students as possible to AI concepts through both general
IHYGEXMSR ERH MR GSYVWIW EGVSWW XLI WGMIRGIW XLI WSGMEP
-R XLI WTIGM¼G GEWI SJ XLI '^+)4 PIZIP 7GMIRGI 4VSKVEQ WSQI %
EPVIEH] TVIWIRX MR XLI GYVVMGYPYQ RSXEFP] XLI QENSVMX] SJ X
EVIE 1SVISZIV SXLIV GSQTIXIRGMIW EVI IEWMP] MRXIKVEXIH EW P
JSVQEP TVSKVEQ VIZMWMSR XS MQTPIQIRX \*SV KIRIVEP IHYGEXMS
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JSV E ½I\MFPI QYPXMHMWGMTMPREV] ETTVSEGL XS %- XLIQIW

Below is a sketch of how technical competencies from the framework could be integrated into
XLI GYVVIRX 4YVI %TTPMIH 7GMIRGI TVS¼PI EX (E[WSR 'SPPIKI [M
1EXLIQEXMGW 7XEXMWXMGW GSQTIXIRGMIW ERH E TVSNIGX FEWI
the technical details needed for working with data and building models.



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J S V ] S Y V ' S R X I \ X

;LMPI XLI KYMHI TVMQEVMP] JSGYWIW SR XLI TVS¼PIW SJ IHYGEXSV  
addresses considerations for other users of the competency framework to take into account when implementing your use case.

#### Program administrators of AI courses and programs

- y Identify growth opportunities such as new programs and courses
- y Evaluate the relevance of current programs and offerings

#### Student success centers looking at developing complimentary trainings for technical or non-technical students

- y Provide students with career counselling:
  - à Support students in selecting the appropriate degree that meets their goals
  - à Assist students in developing an education plan
  - à 7YTTSVX WXYHIRXW MR I\TPSVMRK XLIMV WXVIRKXLW MRX
- y Provide students with career advising:
  - à Assist with resume writing
  - à Help students prepare for interviews
- y Develop resources for students to explore career pathways
- y Develop career development workshops to introduce AI pathways

#### Training managers and human resource managers

- y Identify knowledge and skills gaps in current organizations to develop training programs for internal employees or create recruitment strategies for internal and external hiring
- y Identify goals and formal and informal experiences for career development planning

- y Baseline main and supporting objectives for performance planning
- y -HIRXMJ] XLI WOMPPW ORS[PIHKI I\TIVMIRGI ERH EXXMYI

Prior learning coordinators

- y Use the framework as a baseline to validate and certify competencies
- y -HIRXMJ] XLI GSQTIXIRGMIW VIUYMVIH JSV E WTIGM¼G ¼IPH  
previous experience and knowledge
- y Use it as a reference document for competencies that a candidate should master

Concordia University and Dawson College leveraged the opportunity to collaborate on this project as  
E [E] XS GSRXMRYI SYV [SVO MR EPMKRMK %- VIPEXIH XIEGLMRK E  
ORS[PIHKI ERH EFMPMXMIW WXYHIRXW EVI I\TIGXIH XS TSWWIWW E  
This AI competency framework also supports a success pipeline for learners from college to university  
XS PMJI PSRK PIEVRMRK [LS EVI EPP EX HMJJIVIRX WXEKIW MR XLIM  
address the evolving AI talent needs and serves as a base for curriculum development to balance  
XIGLRMGEP FYWMRIWW LYQER ERH IXLMGEP GSQTIXIRGMIW MR %  
of prior learning.

;I RIIH XS GSRXMRYI XS FVIEO HS[R XLI WMPSW MR XLI [E] [I GSRGI  
NYWX EFSYX HIZIPSTM RK XIGLRMGEP GSQTIXIRGMIW FYX VIUYMVIW  
human skills along with ethical skills.

8LI GLEPPIRKI ELIEH MW XS QSZI FI]SRH WMQTP] GVIEXMRK XLMW G  
the core competencies AI practitioners should possess in a Montreal context to understanding and  
YWMRK XLIWI GSQTIXIRGMIW XS LIPT HIZIPST SV YTHEXI TVSKVEQW









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Data trimming is used for a number of reasons and can be accomplished using  
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TIVWSREPP] MHIRXM... EFPI



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machine learning algorithms to analyze and cluster unlabeled datasets. These  
algorithms discover hidden patterns or data groupings without the need for human  
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Adopted at 175 universities <https://github.com/d2l-ai/d2l-en>

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2-78 2SZIQ Cybersecurity framework [Text]. NIST. <https://www.nist.gov/cyberframework>

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