LEGAL ISSUES OF INTELLECTUAL PROPERTY RIGHTS IN DISRUPTED TECHNOLOGIES ERA: CHATBOTS AND CONVERSATIONAL COMPUTING PLATFORMS

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Keywords: ***Chatbot, Sui Generis Database Right, Conversational Computing Platform, Licensing***

Abstract: *This paper represents the complexity of ecosystem of chatbots and related challenges of IPRs. It focuses on the analysis of legal and case law of the European Union, suggest which of the IPR instruments may be used by chatbots developers in order to ensure effective legal protection, rights transfer and etc. The Survey of the Licensing and Terms and Conditions of 20 Conversational Computing Platforms has discovered different legal possibilities to implement IPRs. This paper is organized: 1) introduction and state of art 2) legal analysis; 3) the survey of conversational computing platforms; 4) conclusions and future work.*

1. Introduction and State of Art

In Computer Science, definition of chatbots is clear: *Chatbots are computer programs that interact with users using natural languages* (Shawar and Atwell, 2007). But it is not so simple to define a chatbot from legal science domain perspective. Lawyers need to define what is a chatbot, what are the most effective legal tools to apply from developers, users, right holders and other users of chatbot's ecosystem perspectives. Is it a computer software, is it a database or a patent («Chatbots», 2014) or a service – makes a big difference.

For lawyers, to understand what is a chatbot, there is a need to look deeper to complexity of the chatbot. A modern chatbot, which pretends to pass the Turing's test (Turing, 1950), consists of few important components: a) chatbot's decision tree, or so called logical conversational sequence, or questions and possible answers tree – in this part a maker of chatbot develops a possible questions and answers provided by the machine, also connects to other databases, outside sources, writes down search queries, models logical way of chat; b) intents, entities, patterns and etc. – elements, which help a machine to navigate through difficult natural language (NL) to the right part of the chatbot tree; c) chatbot's operational software; d) other elements, e.g. voice, video recognition, domain ontologies, vocabularies and etc. So, decision tree is a part which is visible to chatbot users, and maybe easily be copied by the user. Intents, entities, patterns are not visible to chatbot users, usually it is a dynamic content, but theoretically may be re-engineered. Operational software, machine learning components, information storing, user friendly interface – those elements usually are parts of conversational computing platforms, and are less important to the maker of the chatbot. Legal evaluation of other elements is not discussed in this short paper.

In nowadays, chatbots are mostly generated by chatbot makers on conversational computing platforms (CCP), which makes protection of chatbot makers IPRs more complicated because in chatbot development participates at least two parties (maker and rights holder of CCP).

CCP has been named as one of the top trends for 2018 (Panetta, 2017). Moreover, it is being predicted that by 2022, 70% of enterprises will be experimenting with immersive technologies for consumer and enterprise use, and 25% will have deployed to production (Panetta, 2018). Market offers a variety of CCP, from which most significant providers are Amazon, Google, IBM, Microsoft, Nuance Communications, Oracle, and Rulai (Koplowitz et al., 2018). All of the named service providers offer its users to create custom chatbots to increase communication between interested parties. As chatbots and other ML technologies increasingly become the face of many brands, those companies will need to employ people with new types of expertise to ensure that the brands continue to reflect the firm's desired qualities and values (Wilson, Daugherty and Bianzino, 2017).

Instead of developing chatbot software, CCP offer built in voice and text chat interaction tools without the need for software engineers. The users of conversational computing platforms are required to build decision trees and fill it with content and necessary components which would be presented to the interested party by using a build in algorithm. In practice, the Dubai Electricity & Water Authority (DEWA) uses Google AI services to run their chatbot RAMMAS or Los Angeles Business Assistance Virtual Network (LA BAVN) launched their City Hall Internet Personality (CHIP) chatbot on Microsoft Azure Bot platform.

Development of the decision trees, including necessary dynamic elements, as intents, entities, patterns, requires skills, know-how and time, which from the first glance might be qualify as a *database* and should be protected by *sui generis* database rights. However, in order to recognize chatbot decision trees as databases qualifying for protection under *sui generis* rights, the requirements of «substantial investment» should be met. A question arises when the development of decision trees by the users could be qualified as «substantial investment» in order to claim *sui generis* database protection. A copyright might be not clever to apply on chatbots trees and related elements, because of dynamic elements and better protection. A patent registration procedure, especially procedure duration, is not suitable for chatbot trees.

Nevertheless, there are already some related academic discussions, especially related to IPR issues concerning machine-learning systems. The legal protection of input data and ML algorithm has been analyzed mainly from the responsibility management perspective (Singh et al., 2016). The ML algorithm and even the outcome of its work is protected by copyright law and potentially the patent law (Abbott, 2016) and as a form of confidential information (Singh et al., 2016). By contrast, there is little research on the protection of data input into a ML system. It is being assumed that generally it should be protected as a «compilation» in copyright or a «database» if the data set had been assembled in an appropriate manner (Singh et al., 2016).

This paper aims at answering questions whether decision tree makers may apply sui generis database right and if yes, what would be the most effective legal mechanism to protect the database, also what are obstacles to accomplish the said aims. To answer the questions, two methods are applied: 1) legal analysis of EU sui generis database rights regulation and ECJ and EU Member States case law; 2) the survey of 20 different CCP.

2. Legal analysis

EU Database Directive provides a protection of database author's/maker's rights by *copyright law* and *sui generis* protection. Copyright protection would be applied only if the selection or arrangement of the contents of the database would be authors own intellectual creation. The Preamble to the Directive stipulates that such protection would cover the structure of the database, however, it would be subject to the criterion of the originality and no aesthetic or qualitative criteria could be applied. Where the database creator would not be entitled to copyright protection, a *sui generis* protection could be available, but only if the creator of the database would substantiate substantial investment in obtaining, verifying or presenting the contents. In this chapter the question: *Whether the intellectual and time investment made by the average skilled person using*

a conversational computing platform to build the chatbot could be protected by copyright law or sui generis database right? is discussed.

Art. 3(1) of the Database Directive provides a copyright law protection for database authors whose selection or arrangement of the contents constitute intellectual creation. Firstly, in order to claim the protection, the chatbot decision tree and related data should constitute a «database» within the meaning of Article 1(2) of Directive. Qualifying database is understood as the systematic or methodical arrangement of data that is individually accessible in the database (Case C 444/02 Fixtures Marketing [2004] ECR I 10549).

Setting up the dialog flow requires creation of the decision tree with many «if then» or other conditions, domain and language ontologies, patterns and input of data that would answer the interested parties' interests. The maker of chatbot models the dialog flow by arranging the information in the systematic and methodical manner. The information used in the exchange of information can be individually accessible and is not altered in the process of creating database. Respectively, the chatbot, including its design of decision tree could be recognized as a database within the meaning of Article 1(2) of Directive.

Secondly, to be entitled to the copyright law protection the standard of originality should be applied. However, in case of non-original compilation of content such as listings of advertisements, laws or scientific publications, copyright law would not be applicable. In *Football Dataco v Yahoo* ECJ ruled out that the selection or arrangement of data in a database should amount to an «original expression of the creative freedom of its authors» (Case C-604/10 Football Dataco v. Yahoo [2012]).

There is little practical interest in litigation on copyright database protection in comparison to the *sui generis* right. The handful of relevant national cases have concerned rather particular examples: an anthology of «the most important» poems or a selection of websites for children (Commision, 2018).

However, as the development of the structure of conversations may require significant intellectual and time efforts, even though the structure or the associated content may be not be original, it could be argued that the database *sui generis* legal protection could be applied. Sui generis legal protection also is more suitable for dynamic, not fixed content, which is a common practice of chatbots operating in CCP.

Art. 7(1) of the Database Directive establishes the protection of databases that result from substantive – qualitative or quantitative – investment in obtaining, verifying or presenting of the contents.

The investment into the obtaining, verifying or presenting information in the chatbot decision tree should be substantial. The Directive does not offer much guidance in interpreting the notion of «substantial investment». The ECJ decisions do not completely answer the questions as to what quantum of investment is necessary to meet the requirement of substantial investment and how that might be measured (Davison and Hugenholtz, 2005). However, ECJ does provide guidance on the investment criterion and its sufficiency which maybe successfully applied in respect of the chatbot decision trees.

Investment in the creation of a database may consist in the deployment of human, financial or technical resources, but it must be substantial in quantitative or qualitative terms. The quantitative assessment refers to quantifiable resources and the qualitative assessment to efforts which cannot be quantified, such as intellectual effort or energy (Case C 444/02 Fixtures Marketing [2004] ECR I 10549).

Based on this guidance two situations maybe be identified for *sui generis* rights application purposes. In standard cases the creation of the chatbot decision tree could take at least 160 hours (Keyword and Posts, 2018). If a person is building non-standard chatbot, let us say to outsource certain functions to professionals, for example, the doctor trains a bot to consult patients, lawyer trains a bot to advise clients, no one could argue that the creation of such bot would not require substantial intellectual effort and energy. Respectively, such decision tree should constitute database protected under *sui generis* database rights.

Of course the protection of such chatbot decision trees should not be considered to be universal. The question may rise whether *sui generis* protection would be applicable if the platform user applies the built-in solutions and set-up a primitive chatbot for management of basic information, for example, to book a table or inform

about the working hours. In such case the development of such decision tree would not require significant intellectual effort and energy; therefore, the user would not be eligible to *sui generis* database right application. On other hand, decision trees accompanied by intents, entities, and patterns could be automatically updated by CCPs' ML processes and analytics of use cases, so maker of the chatbot is no longer the only party, which makes a chatbot. In opposite, CCP's may have also benefits from chatbot makers by improving started chatbots, or designed for some specific domain. The CCP, allowing its users to use their developed software, may train their software with the assistance of machine learning on the input provided its users. With every chatbot created and adjusted in the CCP, the ML software is trained to respond to the users' needs better. For discussion, if the owner of the CCP may use the information supplied by the user, the CCP becomes entitled to use this information against fair competition rules?

Respectively, such CCP should acknowledge that decision trees, intents, entities, patterns could be subject to *sui generis* database rights protection and, respectively, should receive a license to use the inputs provided by the users in order to train the software and further use it for the commercial purposes. This would allow the developers of the chatbot decision trees to own the intellectual property rights and decide whether to grant the right to use the input data to the CCP.

The *sui generis* database protection may become relevant as the new technologies emerge. On the 25th of April 2018 the European Commission published a second evaluation of the Database Directive. The analysis aims at evaluation of the necessary amendments due to disruption of the technology. The evaluation extends the limitations imposed by the seminal 2004 rulings from the Court of Justice of the European Union (CJEU) (Court of Justice, 2004a, 2004b, 2004d, 2004c), which reduced the scope of the *sui generis* right to «primary» producers of databases, to the current technological developments. This could apply in many situations involving the automated creation of machine-generated data (e.g. Internet of Things data). However, in the context of automated data collection by sensor-equipped, connected «Internet of Things» objects it becomes increasingly difficult to distinguish between data creation and obtaining of data when there is systematic categorization of data already by the data-collecting object (e.g. industrial robots)(Commision, 2018). However, unfortunately the evaluation did not analyze the CCP technologies and protection of user submissions.

The unlawful usage of big data in online market places was protected by *sui generis* rights by ECJ and the national courts. In 19 December 2013 ECJ took a decision that the operator who makes available on the Internet a dedicated meta search engine which re-utilises the whole or a substantial part of the contents of a database it infringes *sui generis* right under the Article 7 of the Directive 96/9/EC («Innoweb BV v Wegener ICT Media BV, Wegener Mediaventions BV, ECJ 19 December 2013, Case C-202/12,» 2018). ECJ stated that the concept of «re-utilisation» should be interpreted as referring to «any act of making available to the public, without the consent of the database maker, the results of his investment, thus depriving him of revenue which should have enabled him to redeem the cost of the investment». The Spanish Supreme Court issued a final judgment concluding that Infonis made a substantial investment to create database of ZBSales (a database tracing the health map of all the Spanish autonomous communities) was protected by *sui generis* right, therefore, IMS Health that extracted the data was fined with 5 mln EUR fine («Tribunal Supremo (Supreme Court) 1 November 2018, Case 2455/2015», 2018).

In the light of these decisions, the circumstance that the CCP may take the whole decision tree to train the AI software or even to offer as an model for other users, could be recognized as a re-utilization of the database, which would deprive the user from revenue. It should be a legitimate expectation of the chatbot decision tree developer that, if the substantial investment was required to develop the decision tree, third parties should not be able to re-utilize the database without consent.

However, more uncertainty is beard by the public entities that could not argue that the re-utilisation of the database have directly deprived from the revenue which should have enabled it to redeem the cost of the investment. There might have been no direct connection between revenue generation and public functions;

however, it should not deprive the public institutions from the right to protect the developed intangible assets. The Database Directive does not make a distinction between the nature of subjects entitled to the protection by database *sui generis* rights. It should be noted that Art. 13(1) of the Directive 2004/48/EC on the enforcement of intellectual property rights stipulates that the rights holders damages will be paid by the infringer. Also for the damage setting purposes all appropriate aspects should be taken into account also elements other than economic factors, such as moral prejudice caused or by calculating what would be the least amount of fees that would have been due if the infringer had requested for the authorization to use the intellectual property. Respectively, in case of the dispute the argumentation of proving the damage incurred by the public institution should be structured differently and not based on the loss of revenue.

Respectively, it could be concluded that the chatbot decision trees including supportive elements of it could be recognized as databases and protected by *sui generis* rights stipulated in the Database Directive. This would entitle to the protection of the creator of the chatbot decision tree and rights to damages in case of illegitimate re-utilization.

3. The Survey of Conversational Computing Platforms

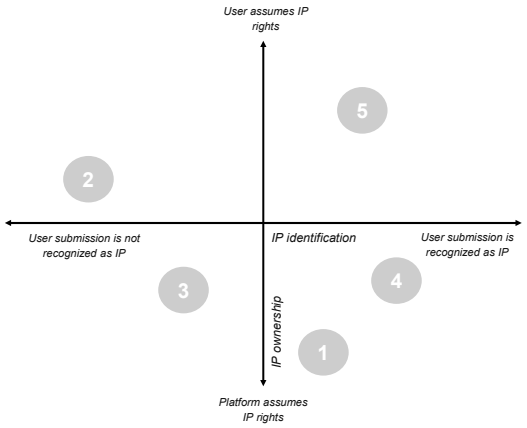
The Survey presents analysis of 20 CPP's Terms and Condition (ToC). In the first part, the scope of rights granted to the CCP by the users, references to databases and the possibility to negotiate the terms was analysed. In the second part, legal analysis of user IP protection of using CCP was analysed.

3.1. IP Protection Provided Under the ToC of CCP

In order to evaluate the status quo of protection the rights of chatbot makers (users), a number of Terms and Conditions of CCP was reviewed. During the Survey, relevant Terms and Condition passages was collected in the Table 1, which is available at website https://github.com/martynui/CCP. The relevant ToC were classified to 5 categories in Table 2 and in Figure1 the graph is modelled according to the level of identification of user submission as an intellectual property and which party actually assumes intellectual property rights.

#	**Category**	**Companies**
1	User submissions are not identified as an object of intellectual property, however, T&C emphasizes that the service provider assumes all rights to use the submissions	Amazon (US), ManyChats (US), KITT.AI (US), IBM (US)
2	T&C are silent on the user submissions	Hubtype (Spain), Instabot (US), Chatlio (US)
3	T&C are silent on the user submissions, however Private Policy provides wide definition of information collected	Reply.ai (US)
4	T&C recognize the user grants a license to Platform to use user submissions	Intercom (US), Microsoft (US), Botsify (US/), Avaamo (US), Botnation (France), Dialogflow (US), Chatfuel (US), FlowXo (UK), Sequel (US)
5	T&C explicitly stipulates that user submission is the ownership of the user	Pandorabots (US), Tars (US), Oracle (US)

Table 2: Classification of the Terms and Conditions of CCPs



1. No clear definition, Platform assumes all rights
2. No guidance
3. Indirectly covered only in Private Policy
4. User grants a license to the Platform
5. User assumes all rights

Figure 1: The graph of classified ToC of CCP according user IPR's recognition model

The Survey has discovered:

1. 13 of 20 reviewed CCPs recognize user submissions as intellectual property objects.
2. 9 of 20 reviewed CCPs recognize user submissions as intellectually property, however, under the Terms and Conditions stipulates that the users grant CCP the license to copy, distribute, transmit, publicly display, publicly perform, reproduce, edit, translate and reform the submissions.
3. None of the CCPs has specifically distinguished chatbot decision trees as elements of user submissions, nevertheless, it can be concluded that the CCP recognize the value of information provided by the users and seek to avoid any possible claims.
4. Only 2 from 13 of CCP, recognize user submissions as an as intellectual property objects, are from Europe, the other 11 are from US.

3.2. Legal Issues of Conversational Computing Platforms

In order to understand how CCP affects intellectual property rights of users of the CPP, who create their chatbots, it is important to check what are the conditions applied. Some of reviewed conversational computing platforms require their users to grant licenses. There exist few scenarios: a) no significant investments made by user on CCP; b) significant investments are made by user on CCP. On the second scenario, user might apply *sui generis* database rights. If *sui generis* database rights are applied, CCP could have legal problems to execute the protected chatbot, so user should grant access to CCP, in cases when *sui generis* database rights are applied, because of significant investments. The Survey discovered that this option is not discussed in CCP licences.

Art. 7(4) of the Database Directive stipulate that the same database maybe protected simultaneously by copyright and *sui generis* rights. Moreover, Art. 7(3) of the Database Directive stipulate that the *sui generis* right may be transferred, assigned or granted under contractual license. In addition, Art. 15 of the Database Directive stipulate that any contractual provision contrary to Article 6(1) and 8 shall be null and void. Article 6(1) and 8 grant the exceptions to the receipt of authorization with respect to access and normal use of the contents by the lawful user and the extraction and re-utilization of the insubstantial parts of the contents. Exceptions are granted only to the insubstantial parts of the contents, so CCP can't apply this exception. CCP is ensuring functioning of whole chatbot, but not only insubstantial part of it. Exceptions for substantial parts are not

granted to commercial purpose at Art. 9. So, user must choose their terms and conditions under contractual license with CCP.

The Survey has discovered those findings on legal issues:

1. The Terms and Conditions vaguely describe the subject of the contract; it is not clear whether the CCP request for a copyright license or also for a *sui generis* license. Only the Terms of *Chatfuel* determine that the user submissions are protected by copyright and/or other intellectual property rights, respectively, the granted license presumably should cover also *sui generis* rights (Chatfuel, 2019). What is being licensed is the heart of the license agreement, however, all Terms and Conditions clearly lacks clarity on the subject matter. The license grant clause spells out the types of intellectual property being licensed and within each category of intellectual property, which of the exclusive rights (Gomulkiewicz, 2014). Due to the vagueness and no reference to database protection, it could be concluded that the Terms and Conditions do not cover *sui generis* rights.

2. It could be argued that the licensing arrangements provided in the Terms and Conditions could not be recognized as contractual licenses under the Database Directive due to inequality in negotiation power. In the «click-on» type of contracts there are no negotiations between the parties, there provisions are rather non-negotiable(Davison, 2003). Consequently, the question remains how imbalance and the fact that one party is clearly suffering would be interpreted by local courts. Respectively, even if the Terms and Conditions had determined the legal provisions covering *sui generis* database rights, their enforceability cannot be ensured. To mitigate the unequal treatment, the CCP could at least commit to identify the creators of the databases that the CCP are using to train their AI software, the licenses should be limited in term, in scope, or even could be considered to be not royalty-free. Moreover, the Terms and Conditions could include non-competition clauses. The CCP having the software required for chatbots and AI trained on database of chatbot decision trees, could create competitive disadvantages for users who have developed a database and it is shared with competitors through the CCP. For example, a hospital develops a chatbot providing online treatment or a legal department of the municipality develops a chatbot rendering legal advice, if the decision trees were not properly protected, the CCP could offer the pre-developed decision trees for other hospitals or municipalities, which could be regarded as unlawful re-utilization of the decision tree.

Considering the above-mentioned it could be concluded, that the conversational computing platforms willing to extract and/or reutilize substantial portion or full part of the chatbot decision trees should sign contractual agreements with users. The Terms and Conditions should entail the following provisions:

– Provisions stipulating that the license rights include *sui generis* database rights;
– The license grants the right to extract, reuse, reproduce, and share all or substantial part of the database;
– User favouring terms for the suppliers of chatbot decision trees, such as, identification of creators, limitations in term, scope, or payment of considerations, inclusions of non-competition clauses.

4. Conclusions and Future Works

The analysis suggest that the parts of chatbots provided by chatbot makers on CCP may be recognized as databases and thus can be eligible for *sui generis* rights protection. The practical analysis of few dozens of Terms and Conditions of conversational computing platforms has shown that Terms and Conditions do not amount to contractual licenses, thus analyzed CCP do not have a legitimate basis to utilize or extract from the databases submitted by the users. In order to avoid legal disputes, it is highly recommended to include into the Terms and Conditions of the CCP provisions regulating licensing of databases and other provisions that would equalize the parties to the contract.

In EU, users of CPP have right to choose the conditions of reuse of chatbot, qualified for protection under *sui generis* rights: it may be granted access to whole chatbot to extract (the permanent or temporary transfer of all or a substantial part of chatbot to another medium by any means or in any form) and re-utilizate (any form of

making available to the public all or a substantial part of the chatbot by the distribution of copies, by renting, by on-line or other forms of transmission).

In the coming future it is planned to continue survey of CCP's, also analyze the protection of user data used in chatbots from different legal and technical perspectives.

5. References

Abbott, R. (2016) «I Think, Therefore I Invent: Creative Computers and the Future of Patent Law», *Boston College Law Review*, 57(4). doi: 10.2139/ssrn.2727884.

«Case C 444/02 Fixtures Marketing [2004] ECR I 10549» (2004), (June 2004), pp. 1–7.

«Chatbots» (2014). Available at: https://patents.google.com/patent/US9369410B2/en (Accessed: 16 December 2019).

Chatfuel (2019) *Terms of Use*. Available at: https://chatfuel.com/TermsOfUse.pdf (Accessed: 5 May 2019).

Commision, E. (2018) *Evaluation of Directive 96/9/EC on the legal protection of databases*.

Court of Justice (2004a) *Fixtures Marketing Ltd v. Oy Veikkaus Ab (C-46/02, 9/11/2004)*. Available at: http://curia.europa.eu/juris/showPdf.jsf?text=&docid=49636&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=5381478.

Court of Justice (2004b) *Fixtures Marketing Ltd v. Svenska Spel Ab (C-338/02, 9/11/2004)*. Available at: http://curia.europa.eu/juris/showPdf.jsf?text=&docid=49634&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=5382720.

Court of Justice (2004c) *Fixtures Marketing Ltd v Organismos prognostikon agonon podosfairou AE (C-444/02, 9/11/2004)*. Available at: http://curia.europa.eu/juris/showPdf.jsf?text=&docid=49635&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=5384954.

Court of Justice (2004d) *The British Horseracing Board Ltd and Others v William Hill Organization Ltd. (C-203/02, 9/11/2004)*. Available at: http://curia.europa.eu/juris/showPdf.jsf?text=&docid=49633&pageIndex=0&doclang=EN&mode=lst&dir=&occ=first&part=1&cid=5384513.

Davison, M. and Hugenholtz, B. (2005) «Football fixtures, horse races and spin-offs: the ECJ domesticates the database right», *EIPR*, (3).

Davison, M. J. (2003) *The legal protection of databases*. Cambridge University Press.

ECJ (2012) *Football Dataco v. Yahoo (C-604/10, 2012)*.

Gomulkiewicz, R. W. (2014) *Licensing Intellectual Property: Law and Applications*. Wolters Kluwer Law & Business (Aspen Casebook Series). Available at: https://books.google.lt/books?id=kMTfDgAAQBAJ.

«Innoweb BV v Wegener ICT Media BV, Wegener Mediaventions BV, ECJ 19 December 2013, case Case C-202/12 »; (2018), pp. 1–6.

Keyword, S. B. and Posts, R. (2018) «Hidden Brains Insights», pp. 1–6.

Koplowitz, R. et al. (2018) «The Forrester New Wave™ : Conversational Computing Platforms, Q2 2018», *Forrester Research, Inc.*

Panetta, K. (2017) «Top 10 strategic technology trends for 2018», *Gartner Research*, 2018(October 2017), pp. 1–9. doi: G00327329.

Panetta, K. (2018) «Gartner: Top 10 Strategic Technology Trends For 2019», *Www.Gartner.Com*, (March), pp. 1–5. doi: 10.1093/nar/gkq953.

Shawar, B. A. and Atwell, E. (2007) «Chatbots: are they really useful?», in *Ldv forum*, pp. 29–49. Available at: https://jlcl.org/content/2-allissues/20-Heft1-2007/Bayan_Abu-Shawar_and_Eric_Atwell.pdf.

Singh, J. et al. (2016) «Responsibility & Machine Learning: Part of a Process», *Ssrn*, pp. 1–20. doi: 10.2139/ssrn.2860048.

«Tribunal Supremo (Supreme Court) 1 November 2018, Case 2455/2015» (2018), pp. 1–5.

Turing, A. (1950) «Computing Machinery and Intelligence», *MIND the Journal of the Mind Association*, LIX(43), pp. 433–460.

Wilson, H. J., Daugherty, P. and Bianzino, N. M. (2017) «When AI Becomes the New Face of Your Brand: Metasearch for University of St.Gallen, Library», *Harvard Business Review Digital Articles*, pp. 2–5.