

Příloha č. 01 – Specifikace předmětu plnění veřejné zakázky

Položka	Minimální požadované specifikace softwaru	Počet licencí	Výrobce a typ softwaru	Specifikace nabízeného softwaru	Cena za 1 jednotku bez DPH	Celková cena za položku bez DPH	Maximální celková cena položky bez DPH	Zadatel o položku	Příkazce operace	Zakázka	Pracoviště	Místo doručení; kontaktní osoba
Matematický software	<p>Komplexní software musí být schopný řešit a podporovat:</p> <ul style="list-style-type: none">- Integrované prostředí pro vzdělávací účely a vědeckotechnické výpočty, modelování, návrhy algoritmů, simulace, analýzu a prezentaci dat, paralelní výpočty, měření a zpracování signálů, návrhy řídicích a komunikačních systémů.- Programování aplikací, tedy především symbolické a znalostní programování s využitím symbolických výrazů a schémat pro rychlý návrh programového kódu, tj. rychlé a přehledné prototypování návrhů algoritmů a postupů při řešení výpočetních problémů.- Programování pomocí různých stylů - procedurální, funkcionální, rekurzivní, rule-based, pattern-based a možnost exportu vlastních funkcí do jiných programovacích jazyků.- Spolupráci a linkování s externími programy a vytvořenými moduly v C/C++, .NET, Java, Python a R jazyce, možnost integrace vlastních nativních funkcí přímo do jádra systému.- Využívání meta-algoritmů a jejich efektivní vnořování bez nutnosti psaní rozsáhlých programových kódů.- Vysokou kompatibilitu kódu s předcházejícími verzemi.- Symbolické matematické výpočty - např. symbolické řešení různých typů rovnic derivací a integrací.- Zadání matematických úloh a zápis matematických výrazů v běžné podobě bez znalosti programování (free-form linguistic input v anglickém jazyce).- Interaktivní práci- v podobě editoru programového kódu, ve kterém lze současně psát a formátovat "obyčejný text" a současně využít výpočetního potenciálu daného softwaru (např. pro psaní interaktivních skript, interaktivních vědeckých textů apod.),- ve formě vytváření grafických prezentací s využitím výpočetního potenciálu softwaru,- formou vytváření "uzavřených" programových a vizualizačních modulů pro názorné ukázky činnosti navržených algoritmů nebo matematických, fyzikálních, chemických principů. Dále bude umožňovat využívání modulů již publikovaných a sdílených ve veřejně dostupném repozitáři, tj. tvorbu interaktivních dokumentů (Computable Document Format - CDF), včetně interaktivních výpočetních aplikací nevyžadujících pro třetí uživatele znalost programovacího prostředí.- Export do interaktivního CDF formátu.- Numerické výpočty včetně řešení soustav i jednotlivých diferenciálních rovnic (obyčejných i parciálních) a rovnic algebraických i transcendentních.- Real-time zpracování dat.- Propojení s databázemi, export a import dat.- Práci s algoritmy z oblasti strojového učení (machine learning), umělými neuronovými sítěmi včetně deep learning systémů, Bayesovskými klasifikátory, algoritmy pro feature extraction, např. Principle Component Analysis a dalšími. Tuto práci bude podporovat základní verze software bez pořizování dalších rozšiřujících softwarových modulů.- Práci s umělými neuronovými sítěmi. Při práci s neuronovými sítěmi bude možno:<ul style="list-style-type: none">• ukládat již „naučené“ síť na specifické problémy pro pozdější využití nebo distribuování dalším akademickým a vědecko – výzkumným pracovníkům v komplexním formátu obsahujícím data daného paradigmatu neuronové sítě,• definovat si vlastní struktury z předdefinovaných typů vrstev, případně úplně vlastní návrhy topologií přes acyklicky orientované grafové struktury,• používat kategorické, numerické i grafické objekty na vstupech bez nutnosti vlastního preprocessingu,• pracovat s různými typy neuronových sítí - s učitelem (supervised) i bez učitele (unsupervised) včetně deep learning přístupů s možností implementace vlastních učících algoritmů,• využívat jednoduchý symbolický kód pro rychlý návrh,• jednoduchým způsobem symbolicky kombinovat i další přístupy a vytvářet hybridní systémy.- Prostředky pro práci v oblasti image a signal processingu.- Rozšíření základní funkcionality pomocí externích specializovaných knihoven	31	Wolfram Research, Mathematica	Mathematica Network Increment Standard	28 910,00 Kč	896 210,00 Kč	897 700,00 Kč					
					Celková nabídková cena za veřejnou zakázku bez DPH	896 210,00 Kč						

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